THE
PEDAGOGICAL SEMINARY
Founded and Edited by G. STANLEY HALL

VOL. XVII JUNE, 1910 No. 2

THE MOVING PICTURE IN RELATION TO EDUCATION, HEALTH, DELINQUENCY AND CRIME

By J. E. WALLACE WALLIN, PH. D., Normal Training School, Cleveland, Ohio

The nineteenth century gave us the laboratory; the twentieth, the moving picture. As the laboratory, with the precise technique, accuracy of observation and experimentation, and correctness of inference, which it exacts when properly employed, represents the high water stage during the last century in the evolution of effective educational tools; so the kinetoscope, with its alluring shifting scene, its compelling reality, its limitless range of subject-matter, represents the most highly evolved educational instrument which the present century has bequeathed. Rightly used it is one of the most valuable allies and supplements to the recognized historic media of instruction. To exaggerate its importance would be difficult. It has been estimated that the moving picture addresses an audience every day of about three million children and adults. The psychology of the moving picture craze can be readily explained. Let us try to understand why it is that the moving film possesses such remarkable excellence as a medium of entertainment and instruction. Understanding the psychology of the moving picture, we shall be in a position to better appreciate the pedagogical and moral questions which it suggests.

(1) The moving picture method of presentation is in harmony with one of the basal tenets of modern educational practice, namely: in teaching, the processes of *nurture* must be made to dovetail with the pre-existent processes of *nature*. The artificial training of the home and school must find its roots in, and be grafted upon, nature's capital, the child's

hereditary endowments. Human culture must utilize instead of suppress native capacities, instinctive tendencies, inherited nervous organization. We rear securely only when we build upon nature's foundation, when we utilize hereditary tendencies aright by diverting them into profitable channels. It would thus appear that one of the sovereign remedies for inattention and educational waste is to appeal to instinctive interests, or to the hereditary forms of attention. How is it possible to arouse instinctive interests? By using those *stimuli* which have played a dynamic rôle in racial evolution; the stimuli to which it was necessary under primitive conditions to attend for self-preservation, stimuli which thus obtained a "survival value" in organic evolution and which are therefore attractive even now though they no longer possess any considerable degree of survival value.

Such stimuli are *living* things in contrast with dead things, *moving* things in contrast with static things, motor phenomena in contrast with intellectual matters, *colored* rather than colorless stimuli, *contrasting* stimuli, *varied* and changing stimuli, *novel* stimuli (which awaken curiosity), *play* and *constructive* activities. Attention to such stimuli as these was exacted of primitive man in order to insure his own protection. Not to attend to them would have meant injury or death. A movement signalized the approach of a possible enemy: in the state of nature the law of social economy was 'dog eat dog,' and all strangers were objects of fear. Repeated attention to these stimuli therefore culminated in the formation of certain *habits* of attention which were transmitted in course of time to the offspring as *instinctive interests*. It is thus that *play* arose. Work habits were transmitted as play dispositions. Ancestral work established certain nervous pathways of discharge. The child was born with these pathways permeable, organized. With him, to imitate adult occupations was a form of play that was greatly enjoyed because the hereditary pathways were open and would thus function without much effort. Accordingly man now under other than primitive conditions attends to all these stimuli because of inherited nervous predispositions; they represent *instinctive* interests in contrast with *acquired* interests, the interests which are the result of individual experience and which attach to one's vocation or avocation, to science, philosophy, literature and art. When the parent or teacher therefore appeals to the child's or adult's instinctive attention, he is placing himself in league with nature and availing himself of a vast hereditary momentum, a capital loaned by nature for accomplishing the educational ends which nature herself could not directly achieve. The potency of hereditary interests and involuntary attention surpasses im-

measurably in the young child the strength of his acquired interests and voluntary attention; hence not to use this force for personal development and growth would be to squander a priceless hereditary dower.

Now, the compelling fascination of the moving picture is due to the fact that it is based upon the dynamics of spontaneous attention, the laws which govern our inherited tendencies to attend. By presenting processes or pictures in motion the biograph calls forth the instinctive tendency to attend to *moving* things. We are strongly tempted to attend to things that move. Often the movement is so striking as to lose its illusory character, so that the objects are literally transmuted into *animate* existences (so fearfully animate that spectators may sometimes be seen to shrink from an approaching steed, or to shriek in fright at a murderous attack), thereby more completely enthralling attention, owing to our instinctive tendency to attend to *living* things. The superiority of the biograph over the stereopticon and, to a degree, over the laboratory is in large measure due to its perennial appeal to these powerful factors of instinctive interest. While the stereopticon is limited to *static* presentations, the moving film can reproduce *processes* themselves in all their vivid and interesting detail.

Scarcely less noteworthy is the manner in which the moving picture uses the other instinctive interests. This is seen in the constant recurrence of sharp *contrasts* in the films in regard to shade, color, size, scene and happening; and in the introduction of the novel, unusual, bizarre, grotesque, ludicrous, comic and playful, which furnish the basis of appeal to the instinctive liking of *change* and *variety*, and of the instincts of *curiosity* and *play*. In presenting the progressive evolution of a story, journey, battle, theft, murder, assault, capture, wedding, coronation, prize fight, parade, manufacture of an article, the playing of a joke, and what not, with a shifting of scene and plot that finds no parallel in actual life so far as rapid development and unexpected denouement are concerned, the moving film in still greater measure utilizes the force of expectant attention and curiosity. Stimulated to anticipate the outcome, whether or not one feels that it is predictable, the images of the imagination, in agreeable playful activity, arouse and sustain attention. With all these factors cooperating to elicit effortless attention, is there cause for wonder that millions sit daily entranced before the magical spectacle of the cinematograph screen? Is it strange that our city blocks have become honeycombed with moving picture shows, while we find no magic lantern theatres? Cleveland now has over 100 of the former but none of the latter. The development of the moving picture business is the theatrical

sensation of the century. The psychology of this sensational development is obvious. The first significant merit, therefore, of the moving picture as an educational instrument is its coerciveness, by which I refer to the compelling hold which it takes upon involuntary attention by virtue of its liberal appeal to the individual's hereditary neural tendencies.

(2) Scarcely less patent is the quality of *realness* of the moving picture, to which reference has already been made incidentally. So vivid and life-like are the objects, scenes, plots, and dramas presented that the picture presentation sometimes surpasses the objective counterparts themselves in dynamic realism. This compelling realism depends on the qualities of the moving film already enumerated: its contrasts, its ceaseless progression, its throbbing action, its soul-stirring plots. In this respect the moving picture form of instruction is infinitely superior to the linguistic form or the telling method. Words fail to exercise the hold upon the imagination that the moving picture does. It provides an opportunity for *objective* instruction sometimes second only, if not frequently actually superior to, the objects themselves in realistic veracity and attractiveness.

(3) Another advantage of the biograph is the high degree of objective *control* and command which it gives over the subject-matter. It is free from the ordinary limitations of space and time, of natural cause and effect, and of human enactment and contingency. Like the laboratory it can manufacture situations at will, arranging, producing, modifying and controlling the conditions absolutely. It can transport distant scenes and events from anywhere to everywhere; it can bring the past into the present, and preserve a living record of the present for the future; it can reproduce the effects of earthquake, storm, fire, famine and war long after these agencies have ceased to devastate; it can exaggerate or distort escapades, events, traits and situations; it can produce in pantomime performances which would be impossible, or intolerable, or illegal in reality; it can present evolutions superior in wonder and mystery to the magic of witchcraft. With exposures lasting one forty-two thousandth of a second, 400 successive phases of the firing mechanism of an automatic pistol have been photographed in less than one-tenth of a second.

(4) The moving picture screen also presents possibilities in the direction of *popularizing* instruction which surpass our fondest dreams. It is a people's lyceum, a pervasive force touching the lives of the masses, millions of children and adults every day, as no other educational instrument has ever done before. Here we have the suggestion of a new interpretation of the continuation school—a people's extension course which

is proving equally attractive to the old and young of both sexes and which transforms instruction into intellectual diversion and recreation. That this value of the moving screen is not unappreciated in certain communities is indicated by the fact that in South Chicago talks have been given by various specialists at moving picture shows as a phase of social betterment work. Reinforced by the pictures, these talks, according to the managers, who have superior means of discovering how certain bills take, receive appreciative attention by large audiences of children and adults. That moving film manufacturers are rapidly awakening to the educational potentialities of moving pictures was likewise evidenced by a recent "free educational exhibit of animated photography," projected and arranged by one of the local film supply houses in Cleveland for the special entertainment of the educators in the public and private schools and colleges of Cleveland. This exhibit, which lasted two hours and a half, was a notable demonstration of superb educational views in colors. Glimpses were given of the leather industry, wild birds in their haunts, the formation of drops of water, various chemical combustions, fruit growing, microscopic curiosities, familiar reptiles, logging operations, tropical creatures, a trip from New York to Genoa, views of Paris from the Eiffel tower, etc. Here was a miniature excursion in the brief space of one hundred and fifty minutes into the world of science and travel. It was prophetic of the coming scientific conquests in the field of animated educational photography.

(5) Finally the *economic* factor has contributed much to popularize the moving picture entertainment. It provides a comfortable seat for a lazy hour at little expense. It has created a new world, enchanting and mysterious, to the legion who because of limited purse had heretofore been denied access to the more pretentious amusements. Now there is scarcely a hamlet so poverty stricken as not to be able to support a picture show.

From the educational viewpoint, therefore, the moving picture is potentially the unique instructional tool of the present century. But the schools have been slow to appreciate its value as a medium for imparting knowledge. Here again current educational practice has failed to square with theory. We have allowed the educational possibilities of the film to be overshadowed by its amusement features. With one of the best educational contrivances the times afford for arousing instinctive forms of attention within hand's reach, we are content to go on demanding voluntary attention through the traditional media, and let the child fight out his battle against fatigue, wandering attention, nervous tension, and forgetfulness.

In lessons in history, biography, geography, industry, manufacture, agriculture, etc., the schools can make a generous and profitable use of educational moving pictures. They are too valuable to neglect. Obstacles there are, to be sure, to their employment, but these are not insurmountable, particularly in the larger cities. To make only one practical suggestion: let boards of education procure as a minimum one moving picture outfit for a given number of buildings; let them secure a travelling moving picture demonstrator to devote himself exclusively to this work, travelling from school to school, arranging the details of the picture demonstrations, in consultation with the regular teachers, and supplementing the pictures with appropriate talks. Each school might well be allowed one or two moving picture periods in the weekly programme. The same pictures would naturally pass in rotation from building to building. They could be correlated with the regular classroom work, and thus illustrate lessons already given or serve to introduce lessons to be given. Or, if this plan seems too cumbersome, moving picture demonstrations could be given in certain centrally located school auditoriums to which all the pupils in a given district, or all the pupils in certain grades in the districts, would have access. These exhibitions could be given on certain afternoons—after the regular school hours if it is desired not to break into the programme. Or they could be given on Saturday mornings. In both of these events attendance would necessarily be optional. The exhibitions would have a great educational value, even if no attempt were made to correlate them with the regular lessons. But in any case they should be interpreted by a competent lecturer. The details of this work would have to be worked out by the administrator; I desire here merely to suggest the feasibility and possibilities of utilizing moving pictures as an instructional instrument in the schools. Will the schools respond to this opportunity or pass it by? At the present time the moving film is as conspicuously *not* a force in the school community as it *is* a force in the larger civic community.

Having said this much in favor of the moving picture, let us turn to a different aspect of the question. The moving picture has become a force in the modern city and town that cannot be ignored. It is a positive agency that bodes much for evil or good, and that is destined to affect some of our most vital national problems in hygiene, morality, and delinquency. A multitude reaching into the millions is brought daily from the great vitalizing out-of-doors into a modern urbanized hothouse, often reeking with noxious fumes and exhalations, and surcharged with a death-dealing superheated stuffy atmosphere. In an investigation conducted during a period of two

months by the children's committee of the Cleveland Humane Society it was found that 50 per cent. of the places examined (somewhat less than eighty) were unsanitary, usually owing to the foulness of the air. The ventilating fans were often found motionless. In a later examination by the superintendent of health it was reported that 25 out of 30 theatres inspected revealed sanitary conditions such that it was necessary to order the proprietors to close the houses unless the conditions were radically improved. Many of these places had no windows or exhaust fans; many had inadequate exits, and unclean floors or cellar openings through which foul air entered the theatre. Considering that these houses have a seating capacity from 150 to 400 and are being filled and refilled continuously, we have here conditions that are a menace to the health and safety of the community. These places are not only unhygienic but often they are death traps in case of a stampede or fire. That hygienic conditions in these show places are such as to force investigation by civic and charitable organizations in the face of strict municipal building codes and sanitary regulations, indicates how easily we may be deceived by trusting to the enforcement of the sanitary code, and how desirable it is to supply a substitute for the public show places in order to divert children from these places. Were the moving pictures made a regular feature in the school programme, there would be less excuse for children to visit the public places.

Unfortunately we do not yet possess studies which approach anything like accuracy bearing on the influence of the moving screen upon the dispositions, feelings and health of the spectators. A cursory investigation of this kind made recently by the writer gave surprising results. Sixty-three girls ranging from 17 to 21 years of age, in an elementary class in psychology in a teachers' training school, were asked to state in writing the effects which they had noticed moving pictures have upon their feelings, dispositions and health. Special pains were taken to emphasize that they must be careful to neither over-state nor under-state the case, but remain true to the facts.

More than half of the girls (or 37) stated that watching the moving pictures induced headache. The eyes were mentioned fifty times, fatigue or strain of the eyes being mentioned 18 times, pain in the eyes 17 times, and blurring 15 times. A "tired or drowsy feeling" was induced in twelve cases, dizziness in 9, nervousness in 9, "feeling cross" in 4, a feeling of disgust in 3, and the following were mentioned once each: an impairment of the memory afterwards, a "queer mood," a feeling as if "walking on air," and a "dreamy, adventurous frame of mind." Exciting or unpleasant scenes were the

usual causes of the nervous strain.[1] Eight ascribed their headaches to the overheated or exhausted air, nine to the motion of the pictures, four to eye strain and one to the brightness of the pictures. Five suffered from headache only when sitting near the screen, one only when the movement was rapid, and three when the pictures were shown continuously. The chief causes thus appear to be the foulness and high temperature of the atmosphere, and the movement of the film. While the trouble arising from the latter can be minimized by occupying a distant seat, it would seem from these returns that oculists will soon have a new condition to deal with, the moving picture eye, or *movingpictureitis*. Watching objects which are constantly shifting is a severe tax on the eyes, as tourists on express trains are well aware. This menace of the moving picture must be remedied if it is to become an abiding educational instrument. The strain on the eyes may possibly be lessened by decreasing the rate of the movement and keeping the spectators farther away from the screen. The flicker which is so apparent in the cheaper films should be totally eliminated. It works positive injury to the retina.

Curiously only four of the answers were negative; so that practically in every case attendance upon the ordinary moving picture theatre produced some unpleasant bodily effects. It should be borne in mind that these students were by no means moving picture fiends; eight of them had attended about once a week during the summer, five were attending about once a week at the time, seven once or twice a month, while fifteen had attended less than six times during their lifetime. Many did not care to attend them because of the headaches or eye-strain, or because of the trivial, disgusting, silly, unnatural or exaggerated character of the subject-matter, which was "neither funny nor interesting but silly stuff." Moving picture managers might increase their patronage by presenting views that are *genuinely* amusing, comical, entertaining and educational! But, alackaday! frequently the pictures are not only trivial, silly or disgusting, but positively revolting and pernicious in their suggestions—of this more anon.

The most serious problems created by the moving pictures are moral and social. The moving picture show has been referred to as a "new moral leprosy" which, unless brought under strict control, will weaken the moral fibre of the race. Here again we must rest content for the present with the scanty facts at our disposal, rather than dogmatize *a priori*.

---

[1] The statements of the "causes" or reasons were *volunteered* by the students, and hence have no quantitative value, as some ventured explanations but others not.

Many picture theatres are located in environments that are forbidding. The Cleveland Humane Society found a show, frequented by boys and girls, which connected directly through a passageway with a saloon. Liquor passed freely between the saloon and the theatre. One theatre was located beneath a disorderly house, the entrances to both being side by side. In many places the vaudeville acts, songs or pictures were objectionable, owing to their unclean, indecent, vulgar or revolting suggestions. The committee examined 290 different films, and saw fit to condemn 40% of them as objectionable. The objectionable features, in the order of prevalence, were as follows:

Stealing,	13.4%
Murder,	13.1%
Drunkenness,	13.1%
Indecent suggestions,	8.2%
House breaking,	7.2%
Loose ideals of marriage,	6.5%
Domestic infidelity,	5.8%
Vicious mishief,	5.8%
Suicide,	3 films
Kidnaping,	2 films

Here is a motley array of subject-matter calculated to appeal to the baser elements in human nature! The conditions found in Cleveland are probably typical of the larger cities the country over, except where there is a system of rigorous censorship of the films. Such a system is merely in its incipiency at present. Rigorous censorship of moving picture films, under state or municipal supervision, would tend to purify the subject-matter of its grosser forms of vulgarity, indecency and blaspheming of sacred institutions. But its influence would be destructive rather than constructive; negative rather than positive; for while it would exclude some of the positively pernicious views, it could do nothing to compel theatre managers to put on views which are positively good, which are genuinely illuminating and educational, really humorous and entertaining without being travesties on moral and civil codes and institutions, and refining and ennobling. To trust to the theatre managers and moving picture public for a positive reform and improvement of the views would often lead to disappointment. Man still has so much of his brute ancestry in him that his judgment is largely suspended when his animal passions are aroused. It is surprising to witness how women even will call for encores of acts in burlesque shows that are so revoltingly indecent as to make a disciple of the 'life of reason' actually sick to behold them. There are no fires that burn so fiercely within the human breast

as the fires that are fanned into action by arousing the instincts of the brute man. In contagions of suggestion reason is temporarily dethroned, and men and women will follow the mob wildly in its deeds of rapine, destruction and murder. The pictures in the ordinary shows saturate the minds of the spectators with suggestions of stealing, house breaking, murder, pillage, kidnaping, drunkenness, levity, indecency, social vice, domestic and marital infidelity, elopement, playing pranks, etc. These suggestions often lead to the corresponding actions, according to the known principle in psychology of dynamogenesis, or ideo-motor action. According to this principle the mere thought of a movement is an incipient movement. All thought is motor in tendency. It tends strongly to innervate some muscle or gland. Thus it is that the mere thought of a watermelon may cause the saliva to flow; the mere thought of a lemon will produce a scowl; the mere thought of vinegar tends to cause the mouth to pucker; the thought of a high steeple tends to cause the eyelids to open wider; the bare perception of a knock may cause the head to turn or the leg muscles to grow tense; the mere attention to a thing may cause us to move toward it. It is thus that we often bump into people we meet on the sidewalk, or collide with a bicyclist when our attention is riveted upon the one or the other. We *tend* toward the things we *attend* to. The circuit of thought is not complete until it has produced a motor reaction or a tendency to react. The unit of nervous action is the sensory-motor arc; perception unless obstructed discharges itself into action. It is therefore clear that a moving picture is an incentive to action; a direct challenge to its imitative reproduction. The fact that the imitative reproduction does not follow the perception directly is immaterial to the argument, because the perception may occur later in the form of an image or idea, and the idea, if there are no inhibiting ideas or circumstances present, may then possess the same dynamogenetic tendency.

Newspaper items have made us sufficiently familiar with the grave dangers involved in suggestions derived from moving pictures. We read of how a young swain and lassie conceived the idea of eloping from a moving picture representation of a successful romance that fired the youthful imagination; how a man received in the picture show his first lesson in purse snatching, another in pickpocketing, another in shoplifting, another in burglarizing a tenement house; how a man got his cues as to how to hold up and rob automobiles; how another got his tips from the film on how to flirt with a neighbor's wife, etc., etc. Our knowledge is very inadequate as yet concerning the real significance of the moving picture in suggesting pranks, tricks, misdemeanors, unheard-of escapades and

crimes. Owing to the extreme license which is permitted in the matter of presenting all manner of subject-matter, there is no trick or method known to the professional crook, villain or jester that may not be vividly demonstrated to the susceptible juvenile or the viciously inclined adult mind. Hence moving picture shows may become veritable training schools of mischief, mockery, lawbreaking and crime.

We stand in sore need of an exhaustive study of the effects of suggestions derived from moving pictures upon the subsequent conduct of the spectators, old as well as young. To secure some such facts, the writer asked the psychology students referred to above to write upon the following question: Have you ever seen, heard or read about children and adults *acting out* the ideas or suggestions conveyed to them by moving pictures? The tabulation of the answers gave interesting results. Twenty-nine of the replies were negative, eight doubtful, while all the others reported instances where they had personally observed or learned through report that the suggestions had resulted in the performance of the acts which were pictured. Seven of these related to the playing of jokes and pranks, five led to acts of stealing, four to a desire to do as the picture actors did, and two to fighting. It will be of interest to reproduce some of the replies.

"Pictures with a good moral leave me with a desire for a time to act in accordance with the moral. I saw a picture depicting self-sacrifice, and for a time I did the unpleasant duties more willingly. Rather than allow my little sister to fail in arithmetic the next day I sacrificed my interest to hers, and accordingly I 'flunked' in general method the next day. This came near spoiling the good effects of the picture show." "Once I saw a moving picture showing a poor family, the father out of work and the children crying at their mother's skirt. The woman was offered assistance by a rich man who took her away. Soon afterwards her husband returned with plenty of provisions and a position. This picture was so pitiful as to make me resolve that under similar circumstances I would never leave my family." "My brother got the skeeing mania from seeing pictures of skeeing in Switzerland. He has made a pair of skees, and is now learning to use them. I have seen several boys making models of aeroplanes after having seen flights of various kinds of airships at a show." "I have observed my little sister exactly imitate pictures in playing show, but the morals taught have made no impression, owing probably to the fact that she was too young to comprehend." "A little boy about three years of age was with us one evening to a picture show. One picture particularly attracted his attention, a representation of acrobatic per-

formances. When this little boy went home he tried very hard to go through the same movements." "I have seen children act out war scenes, tricks, and reproduce new steps in dancing." "My little nephew always tries to reproduce actions and grimaces which he has seen." "A little boy I know delights in pictures of Indians and cowboys, and tries to imitate them. Once he saw an Indian who was creeping stealthily on hands and feet toward a white man in order to kill him. He had a short knife in his mouth. One day I saw the little boy going through the same actions. He also imitates soldiers. He makes swords of wood and pretends he is fighting by brandishing them at the people about him." "A boy about ten years of age saw a picture of a boy of his own age fighting with his big brother. Now he is always looking for a fight with his older brother. He tries to trip him as he saw the boy tripped in the picture." "A few children went to a picture show and saw an April Fool joke. Different ingredients were mixed into a very disagreeably tasting pudding, which was dispensed to the unwary. The children followed suit when they reached home, making some candy containing mustard, pepper, etc." "I once knew of two boys who saw a couple of boys in a picture scatter pepper about. When they came home they threw pepper around, and created quite a havoc." "Once I saw a picture called 'circumstantial evidence,' in which a boy to make his mother angry smeared jam on a cat's paws, and put hairs from a blonde lady on his father's coat. When I came home I immediately did the same thing to my father's coat, with the result that the same unfortunate thing happened to me as to the boy in the picture." "I have frequently heard of boys committing pranks which, on enquiry, they said that they had learned at moving picture shows." "I have heard of boys enacting the street-chasing scenes, falling over boxes, etc." "I know of a young lad who suddenly formed the habit of playing practical jokes in the neighborhood. His father discovered that his taste for this had been acquired in moving picture shows. One of his favorite amusements was to send in fire alarms by telephone; another, to ask the police sergeant to dispatch aid to a certain house. His companion refused to attend school as he insisted that heroes in the moving picture shows always obtained their 'good fortune' by roaming about in search of adventure." "I read about a small boy who had seen a theft committed in a picture, without the thief being apprehended. About a week later he committed the same crime by the same methods, but was caught and arrested." "Two little girls had seen in a picture how a woman taught a little girl to steal. Later they went into a store and stole little articles, and were caught.

They confessed that they had received their cues in a picture show." "I have several times read of boys who have been stimulated by moving picture scenes to become desperadoes, committing theft and sometimes even murder." "A girl saw in a picture show how a girl ran away from home. This induced her to run away also. When found she explained that the idea had occurred to her from seeing a picture in which a girl ran away, and in which everything turned out all right."

That the moving picture shows may prove a serious menace to the morals of the community and the healthy development of the social organism, is a conclusion that stands out from this limited investigation. More exhaustive investigations will probably emphasize rather than weaken the weight of this conclusion. These shows, enjoying as they usually do, a full measure of unbridled license, may become veritable centres of psychic infection, infecting the imagination with suggestions of all sorts of mischief, waywardness, delinquency and crime. This is particularly true in view of the fact that a large percentage of the spectators are children, who are known to be hyper-suggestible; in the Humane Society's investigation in Cleveland it was estimated that 20% of 10,000 in attendance at the evening shows inspected were children. But the seriousness of the mischief which may result from these shows only emphasizes the vast potential good contained in the cinematograph. Properly regulated it is an inexhaustible fountainhead of wholesome entertainment and valuable information.

I am well aware that in the attitude which I take toward the suggestive power of moving pictures, particularly their power to arouse similar reactions in the practical workaday affairs of life, I am flying directly in the face of Aristotle's venerable doctrine of catharsis. According to Aristotle the mind is purged of base passions and desires by seeing them represented vividly on the stage. By seeing a stage representation of acts of villainy, treachery, conjugal infidelity, murder, etc., the mind lives out these acts in the imagination, and is thus cleansed of the desire to realize them in reality. A slight indulgence is thus an act of purgation and immunization; little renderes us immune for much, just as we innoculate the animal organism with small doses of various antitoxins or vaccines and thus render it immune against various infectious diseases. Similarly we may render the psychic organism immune against various mental contagions by innoculating it by mimic and pantomimic representations of individual delinquencies and social vices and diseases. Hold up vice and evil in all its naked horror and alluring enticement behind the footlights, so that the base passions may live themselves out in the imagination of the spectators,

and thus consume all their energy! This doctrine, however attractive it may seem, will not, I believe, stand the test of careful scrutiny or of an inductive examination of the known facts in the case. The psychological principles of dynamogenesis, suggestion, instinctive imitation and psychic contagion give us a more reliable clue to the effects of vivid picture presentations. It is of the essence of ideas to work themselves out in corresponding movements. To indulge a passion is to stimulate or incite it to further indulgence, rather than to subdue it. While this conclusion seems to be theoretically justifiable and psychologically defensible, the real test of the question is the test of fact. Do moving picture representations of mischief, misconduct, impropriety, delinquency and crime ever actually incite to mischievous, objectionable and reprehensible conduct? We have offered a little evidence to indicate that this is not infrequently the case.

The moral aspects of the matter leave a vital problem which state and municipal governments and school administrators cannot afford to shirk. Public show places, or the manufacturers of moving films should be subject to routine inspection and censorship, and all such films as tend to arouse antisocial and criminal tendencies and base passions should be suppressed. Public films should at least be made negatively wholesome or morally innocuous. But the public schools should do their part to cater to the children's instinctive cravings for the powerful stimuli which the moving film affords, by providing at regular intervals lessons based on wholesome, entertaining and educational moving pictures. The censorship which the schools can exercise in the character of the subject-matter is absolute. To divert the child from the public show places is frequently to rescue him from an environment which is rarely ideal from the point of view of child psychology, and which not infrequently becomes a latent focus of moral contamination, and an insidious breeding-ground for a debauched citizenship.

THE MECHANISM OF THE VOICE AND ITS HYGIENE

By Harry P. Weld, Fellow in Clark University

Some twenty-five hundred years ago, when the anti-vivisection society held sway and it was commonly believed that food passed down the windpipe on its way to the stomach, there lived a physician whose name was Hippocrates. Before he died, he announced to the world the difference between the windpipe and the gullet. How he made the discovery the world never knew. He presented his theory in the form of an argument but so correct was he in his anatomy, that we now know he probably made his discovery behind doors, locked and barred, with the kindly aid of a feeble light and, it may be, a stray cat. However true this may be, we do know, for we have the record, that he was much interested in the mechanism of the voice, for by its sound he was accustomed to judge much of a patient's condition.

We have improved on his diagnosis but we still say the voice is tired, weak or hoarse, or it is rich and vibrant, strong and virile. Voices are restful or stirring, quiet or thrilling; they quiver in passion in anger or fear, tremble in sorrow and shout in joy; are tender in sympathy, sharp in rebuke, piercing in strife. The voice of the child is shrill and piping, of the miser is hard and rough, of the villain is coarse and rasping, of the orator is clear or clarion, muffled or thunderous. They are thick or thin, soothing, gentle, cooing, insinuating. Is it any wonder a great philosopher reasoned that out of the desire of man for the expression of his feelings, language was born?

The secret of it all is doubtless a motor law. As we listen we unconsciously re-enact the muscular movements which produced the sound. The man who in great physical pain utters a groan, can only do so by first closing his glottis, behind which a column of compressed air is forced; then, the door suddenly being opened, the column of air rushes forth through tensed and constricted larynx and the hoarse guttural, followed by the long "o" results. We, as we hear, suffer also. On the other hand, the beautiful "a" of the Italian or Spaniard can only be reproduced, in its purity, with every muscle relaxed. The story is told of a man of letters who sent a note of condolence to a brilliant friend who had recently lost her husband. His letter was simply, "Oh, Madam." After due time she remar-

ried and he, in the letter of congratulation, wrote, "Ah, Madam!" This story is true enough to be true. We react to just this sort of thing many times each day. One who is in the least motor-minded in his speech, feels the throat ache after listening to a so-called orator literally tear his throat. Nerves tingle from the piercing voice of the woman George Eliot describes as talking in the key of G sharp, and we readily agree that the quiet, soft, well-modulated voice of the well-poised teacher, will do more to insure the restful atmosphere of the schoolroom than the strident scolding so often perpetrated on the ears of quivering children.

It has been said that of all cultured peoples, the voices of Americans are the most unpleasant. The voices of cultured Italians and Spaniards are music itself, and even the French nasals and the gutturals of the north German are preferable to the flat vowels and high-pitched, twangy voices of the usual American, the direct result of the tension under which we work and carelessness, perhaps, of these finer things.

All this by way of introduction. It is enough, perhaps, to recall the close connection between the speaking voice and the nervous system, and it offers an excuse for the rather technical discussion which must follow—that of the mechanism of the singing and speaking voice; a mechanism that must be delicate to do the work required of it, and one that suffers from abuse. Its hygiene is largely that of the whole body, though in some respects it has a hygiene of its own.

The human voice may be compared to a wind instrument; in some respects like the clarinet, in one, like the flute and again, as regards the shortening and thickening of the reeds or strings, like the violin. Such an instrument must have three distinct but co-ordinating parts: a bellows to produce the blast, a vibrating reed to produce the initial tone, and a resonance chamber to amplify the vibrations and the overtones. The last of these may call for a little explanation. In a horn the resonance chamber is the tube, ending in a flared-out portion called the bell. In a violin it is the peculiarly shaped box, across the top of which the strings are tuned. It is the shape of this tube or box which gives the instrument its peculiar tone or *timbre*. This is due, as Helmholtz has proved, to the presence or absence of overtones. These overtones, it will be remembered, are caused by the vibrations of segments of the string or column of air that produce the fundamental tone; for instance, if we stretch a string two feet long so that, when set in vibration, it gives the pitch of c (256 vibrations per second), the string will divide itself at a nodal point, exactly half of its length, and in addition to the original tone, we get a tone an octave higher, *i. e.*, a tone double the number of the original vibrations

(c=512). The string also divides in thirds, fourths, etc., giving the fifths and thirds and so on. These overtones multiply. Helmholtz was able to hear sixteen different sounds through the vibration of a single string. Now to return to resonance, we find the resonance boxes differ in their ability to amplify or strengthen certain of these overtones. We therefore have instruments of different quality.

The human voice is, as we have said, a wind instrument. Its bellows is in the lungs and muscles of respiration, its vibrating reed consists of the vocal cords set in a small box called the larynx. It has two resonance chambers: one beneath the vibrating reeds in the thorax or chest, the other above the reeds in the naso-pharynx and nasal cavities. The mouth also ought to be added, for perhaps it is the real "bell" of the instrument and it is largely due to its changeableness, and the use of tongue, lips, teeth and palate, that certain qualities are possible. The problem, then, in the correct use of this instrument, is one of control and the proper co-ordination of each of its parts.

The first element in the control of the voice lies in the bellows, or as it is called, "breathing." Baginsky speaks at length of this factor. The column of air must not press too strongly on the vocal bands; the tension must not interfere with the proper adjustment and vibration of the reeds. Control of voice is control of breath. How can this best be accomplished? If we fill the lungs comfortably and hold the breath, we can do it in two ways: (1) by closing the glottis at the mouth of the windpipe, an action which takes place when we attempt any violent physical exertion, and (2) by leaving the glottis open and holding the breath with the intercostal and abdominal muscles. For voice use the former is quite wrong for the tension is then on the vocal mechanism. If we can keep the tension in the muscles of the chest and abdomen, everything above may be relaxed, which is important for the production of an easy speaking or singing tone. There are as many theories of breath control as there are teachers to teach them and we do not propose to get mixed up with them. Admirable treatment of these methods may be found in Behnke, Curtis or Mills. We can state, however, the principle upon which all are based. It is of course necessary to use every available inch of the lung space. While deep breathing is essential, it is just as important to use the upper portions of the lung. At the same time, too much breath must not be taken, else there will be additional strain on the walls of the lungs themselves. If we raise the chest by drawing in the abdomen and then fill the lungs comfortably, we can feel the lower ribs pushing out against the clothing. The problem

then, is simply one of keeping the chest up and holding the ribs out, for if they are allowed to collapse, the breath will be forced out faster than is needed. It sounds easy but is difficult because the muscles must be trained to hold. Tight clothing of course makes the process all the more difficult. It is remarkable how little air is necessary for even a singing tone. There is a tradition that the old Italian masters (who produced vocalists the like of which we do not hear to-day) required their tenors to run up three flights of stairs and then sing a tone in which so little breath was used, that a light feather would not flicker when held to the mouth. It is impossible to get a pure tone with poor control; too much air means that some of it mingles with the vibrating column, and a breathy tone is the result.

The second factor in the vocal apparatus and by far the most intricate, is a series of bones, muscles, membranes and ligaments which go to make the voice box or larynx and the vocal cords. We shall not go into a technical description of this apparatus which may be found in any physiology or book on the voice. It is enough, perhaps, to say that the larynx is a short tube, three-cornered above and cylindrical below, which is situated on top of the windpipe. It can be easily moved from side to side and moves up and down in speaking or singing. For this reason, high and tight collars which interfere with its natural movement, are injurious.

Within this box are the vocal ligaments called in English, the vocal cords, a very poor name, for they are not cords. The German names *Stimmlippen* or *Stimmbänder* are better, though they are not lips or bands. Behnke uses the word "ligaments," which is better, in that it does not raise a false image (3, p. 59). These bands or ligaments are stretched across the windpipe so that the inside edges, when struck by a column of air, can vibrate; on the outer edges are stronger bands known as the "false cords" as distinguished from the "true cords." The length of the true cords varies. Gerber (6, p. 31) gives the lengths as follows:

In the child	9-10 ½ mm.
In the mature woman	12-15 mm.
In the mature man	14-21 mm.

Behnke (3, p. 61) gives the length in man as ¾ of an inch, and in woman as ½ inch. Gutzmann says the cord in man is one-third larger than in the woman.

This brings us to the subject of "Registers," the most difficult of all, and concerning which there is a wide variance of opinion. The term is a technical one, which many persons of the genus Malaprop manage to use wrongly, *e. g.*, it is often confused with "range" or limits of pitch; again, it is made

synonomus with quality, or sometimes it means nothing at all. A recent newspaper account described the voice of a famous singer by saying she had a "wonderful register." The reporter was perhaps thinking of a hot air furnace. The term really means "an adjustment of a mechanism by which a certain series of tones is produced." The necessity for such a contrivance is quite evident. Suppose we say that the limits of pitch in a single voice are two octaves apart; the adult man must produce these tones with a vocal cord ¾ of an inch long. If we go into the physical laboratory and try to get 128 vibrations with a string or band ¾ of an inch long, and then with the same band try to get 256 vibrations, and then 512 vibrations, we shall begin to appreciate the problem. And when we remember that in a piano it takes a thick string approximately five feet long to produce the low tone corresponding to the low tone of the man's voice, and a thinner string some three feet long to produce the upper tone, we shall begin to see the necessity of some unusual and extraordinary mechanism. For the low series the vocal bands are long and thick, in a higher series they are shorter and thinner, in a series still higher the edges are brought together for half their length. These adjustments, then, are the different registers. We have put the matter rather simply and should be more specific.

The registers were never understood until the invention of the laryngoscope, usually credited to Garcia, who made his first report in 1855. But even with the aid of this instrument, which may be described as a system of reflectors, the reports of observers differ widely. This is due to the fact that the action of the cords can only be seen in a mirror, that the movements are very rapid, that the subject producing the tone must always have a small mirror placed in his pharynx, and last of all, to the different degrees of voice culture of the subjects. It ought to be emphasized here that the boundaries of these registers are not fixed—that is, they do not arbitrarily change adjustments at any one pitch; hence the conflict of opinion. Behnke and Seiler also, recognize five different registers: a lower thick, upper thick, lower thin, upper thin, and small, the last two being found only in the voices of women and children (3, pp. 163, ff.) Many voice teachers recognize these five registers. On the other hand Mandl, Bataille, Koch, Vacher, Martels, Mackenzie and Baginsky say there are but two. The first five of these are quoted by Curtis (5, p. 112), and Baginsky probably made no observation of his own. Gutzmann decides that there are three, with an occasional fourth—a flute-like tone—resulting in an occasional voice; these he calls, chest register, middle register, head register and falsetto register. If now, in the case of tenors, we may substitute the falsetto for

the head register, modern teachers and writers will agree with Gutzmann; such is the conclusion of Marchesi, Randagger, Mills and Curtis. Those who insist on two, combine the chest and middle registers. Mills concludes his discussion by saying (10, p. 165): (1) "All agree that there are registers, or natural changes of quality of tone, corresponding to changes of mechanism or method. (2) All, with the exception of Madame Seiler, agree that the most important changes take place at or near 'a' (above middle 'c') in female voices, and the majority consider that this applies to both sexes equally. (3) Often in males, there is some laryngeal change lower than this. (4) All agree that the high falsetto is of special quality, produced by a mechanism of its own; *i. e.*, all consider it as a separate register, and often, at least, it begins naturally at about "f" sharp. The point of greatest strain is generally about this point for both sexes, and many persons cannot sing higher than this." There is an octave's difference, of course, between the sexes.

As to what happens in these registers, authors are less clear. All agree that in the lowest notes the glottis is open, the vocal cords far apart, and that they vibrate from end to end. As we approach the middle register (the pitch varies in different voices), either the cords divide into unequal segments, or flatten out, becoming thinner and shorter. In the head register, the cords are drawn close together, apparently uniting for a portion of the way, so that only the remainder of the cord can vibrate. Some authors insist, that under these circumstances, they do not vibrate at all, and that the sounds of different pitch are produced by the shape of the tube, as in a flute. It seems quite evident that while, as Mills says, all observers agree that certain adjustments do take place, they are not at all sure of their ground, when it comes to explaining exactly what happens. Fortunately, we do know enough to lay down certain principles as to the hygiene of the larynx, which will be discussed later.

There are one or two problems which ought to be considered here. Baginsky says, that in the matter of tension, tenors naturally suffer most, altos next, basses follow, and sopranos least of all. This is contrary to the usual impression, and, if true, is of considerable importance. Ordinarily, we think of basses and altos as having practically the same mechanism, and of tenors and sopranos as being alike, except for the octave's difference due to the sexes; and it is commonly believed that voices differ in pitch because of a difference in the size and thickness of the vocal cords. It is true that there is a difference between the length of the cords of men and women. Grützner says, "The voice of the woman

is softer than the voice of the man, because her voice cords are more delicate and the action of her throat muscles is more rapid and less vigorous'' (7, p. 89). We have already seen that there is a difference of about ¼ of an inch in length, which implies, of course, a difference in the size of the larynx. So far, it is clear enough. But when we compare the vocal cords of bass and tenor, or of alto and soprano, we do not find these differences. Behnke says, ''It is true, that as a rule, the vocal ligaments of soprano and tenor are shorter than those of contralto and bass; but it is also true that sometimes the very opposite is the case'' (3, p. 75). The only possible explanation, in these cases, lies in the size of the trachea and the larynx; for, if these be smaller in calibre and shorter in length, the tone will of necessity, be higher in pitch. In which case there would be no greater tension in one voice than in another. The real distinction between bass, tenor, alto and soprano, is not only one of pitch but also one of quality; and this, as we have already seen, is largely a matter of resonance. The opinion certainly seems to be justified, that the calibre, the length of the tube, and the size of the resonators, is of far more importance in determining pitch than has been recognized. At any rate, it would be exceedingly interesting to see some measurements correlating the size of the vocal bands and the size of the tube. So far as we know, no such study has, as yet, been made.

There are certain variations in the larynx due to age and sex. The larynx of a newly-born baby is about one-third that of an adult woman; it grows rapidly for the first three years, and less quickly up to the sixth, where it remains practically stationary until puberty. There is also a gradual development of pitch from the first to about the fifteenth year. At this time, there is often a sudden development known as mutation, or change of voice. In girls, it is slight, the increase in range being not more than a tone or two; but in boys the change is more marked. Often the change is gradual, and in the case of some tenors, is scarcely noticed. In boys who are destined to be basses, the voice drops in pitch, from an octave, to an octave and a third. According to Gutzmann, the vocal cords increase one-third in length. Brown and Behnke say, ''The larynx in boys alters in the proportion of 5-10, and in girls of 5-7; the larynx, at this time, is more or less red, and the tissue loose. The vocal ligaments increase not only in length, but also in thickness. In boys, the shield cartilage loses the gentle curve, and forms the prominence known as the 'Adam's apple;' the larynx, in its entirety, increases more in depth than in height, with the result of adding to the length of the vocal ligaments, thereby

producing lower tones.'' At this time boys often lose control of the voice; a tone begun on a lower pitch suddenly slides into the octave above; as Gerber puts it, ''*Sie schwankt zwischen Himmel und Hölle.*'' The cause may be in a breaking down of old co-ordinations and the establishment of new ones, or it may be due to the unequal development of parts. Paulsen found three, among 254 boys, 12 years of age, whose voices had begun to change; at 13 years, of 256 boys, 27 were changing; at 14 years, of 291 boys, 95 were changing; and at 15 years, of 260 boys, 135 were in process of changing, while one voice was settled (12, p. 410).

As may be expected, there is a close connection between the voice at this age and the general awakening of the adolescent. President Hall says: ''Speech, music, cadence, rhythm and perhaps, rate of utterance, are reconstructed. Many bad habits, some suggesting arrest, are settled into. Voices become nasal, throaty, coarse, aspirate, guttural. Vowelization lacks resonance, or pronunciation is slovenly, etc. In common conversation, young people often seem playing on the voice, as if to explore its possibilities in all directions. In all these respects the voice, at this season of change, is very responsive to bodily states, reflecting the general tone, mood, sentiment, feeling and state of health, as at no other age of life'' (9, p. 31).

There is much discussion as to the use of the voice at this time, especially in singing. Individual differences are so great, that even in the judgements of men who have passed through the experience, there is a wide variance. Behnke and Brown received 190 replies to the question whether it is safe for a boy to continue singing while his voice is changing: of these, 158 say that it is decidedly not safe; of the others, some say in their own experience that they sang through the period without any difficulty; others, that if singing is moderate, no harm can be done; a few never noticed any change of the voice. From this it would seem that if there is no break, singing may possibly be continued; while if there is a break, singing for a time is impossible. The authors conclude by saying,—''The bulk of the evidence most strikingly proves the injurious and even ruinous consequences arising from the exercise of the voice, by singing during the period of change'' (2, p. 73 ff.). They conclude also that the voice training of girls should not be commenced until the system is well settled after puberty; *i. e.*, from about 17-19 years of age. Much, of course, depends upon the general physical condition.

Vocal Resonance. We now come to the subject of resonance, a subject, most important, and one, in the case of speakers, especially, often overlooked. Yet, in nature, it is a frequent phenomenon. Tyndall says,—''The sound heard when a hol-

low shell is placed to the ear, is a case of resonance. Children think they hear in it the sound of the sea. The noise is really due to the reinforcement of the feeble sounds with which even the stillest air is pervaded, and also, in part, to the noise produced by the pressure of the shell against the ear itself.'' A vibrating tuning fork may be made to sound like a full chord, if properly reinforced; a voice naturally weak, may be improved in both quality and volume, most certainly in carrying power, if its natural resonance be utilized.

We have already said there are two resonance chambers in the human voice; the upper chest and trachea, below the larynx, and the mouth and nasal cavities, above the larynx. The lower one is, apparently, of less importance, and we shall not stop to discuss it, though it must be remarked that the terms, ''chest-register'' and ''head-register,'' have nothing to do with resonance. The series of tones comprising the chest-register were so called, because they seem to come from the chest; and the head-register, because the tone seems to be up in the head. This is merely a matter of sensations which the singer or speaker feels. Every tone, be it high or low, must be and is reinforced in both the chest and the head.

The upper resonance chamber has been likened to the bell of a horn; but in the voice it is a most wonderful bell, because of its flexibility, its power to change its shape, to assume so many positions and produce tones of so many qualities and emotional characteristics. We are not only able to produce vowels and consonants, but we are able to give these different tones colors or qualities which give them different meanings. A most important phase, however, is, that just as proper breath control has much influence on the proper activity of the delicate muscles of the larynx, so also, does proper use of the upper resonance chambers.

The factors involved are the lips, the teeth and gums, the hard palate or the roof of the mouth, the soft palate terminating in the uvula, the pharynx or throat, and the naso-pharynx which lies above the pharynx and back of the soft palate. On the floor of the mouth lies a most intricate affair, made up of several muscles of different attachments so that it is extremely movable. Mills says, ''To say that it can, with the greatest ease and rapidity, be turned toward every one of the thirty-two points marked on a mariner's compass, is but to feebly express its capacity for movement.'' This may be also, in the last analysis, a reason why the tongue is so unruly a member. What concerns us most, however, is its power to alter the shape of the mouth cavity in every part, so that with each vowel, each consonant, each sound quality, the floor of the mouth is changed in shape, producing a different resonator.

It has been only within the last few years that the part played by the nose, in singing or speaking, has been recognized. This, in spite of the fact that in case of a bad cold, it is evident enough. It is here and in the naso-pharynx, that the overtones of the voice are produced, and it must be remembered that it is the presence of overtones that gives some voices their brilliant and ringing quality; without them, the voice becomes dead, mouthy, wooden. The nasal cavities are broken up, as it were, by projections of bone known as the spongey or turbinated bones, three in each passage. The mucous membrane covering these is very vascular. Scripture says that the character of this membrane is as important for resonance as the shape of the resonators. Curtis quotes Jean de Reszke, the famous tenor, and now one of the first voice teachers of the world, as saying, "I find the great question of the singer's art becomes narrower and narrower all the time, until I can truly say that the question of singing becomes a question of the nose."

The teeth, gums, hard palate and nasal bones constitute the fixed structure, and they determine in no small measure, the shape of the resonance chamber; but it is the work of the movable parts, especially the soft palate and the tongue, to increase or modify the shape of the fixed structure so that the resonance is increased or modified, thus varying the quality and even the volume of the voice. It is to the proper adjustment of the back part of the tongue and of the soft palate, that the proper focusing of the column of vibrating air is due; this column of air, or the voice, ought to be so directed that it will strike the hard palate or sounding board well forward—some say on the lips; at the same time, the soft palate ought to be so relaxed that the air in the naso-pharynx and the nasal passages will vibrate, thus giving brilliancy to the tone. If the soft palate and uvula are drawn up tightly, the nasal cavities will be entirely closed and a throaty tone will result; on the other hand, if the soft palate be entirely relaxed and the back of the tongue raised, the mouth will be shut off, and the tone will go through the nose. The nicety of adjustment demanded for the production of a correct tone, can only be learned by trial and error, *i. e.*, by practice; but for the speaker or singer, it is well worth learning, because not only does it mean a sympathetic voice, but one that has greater carrying power with less strain or tension. The act of drawing up the uvula alters the position of the larynx and tightens its muscles when they ought to be free; the tightening of the back muscles of the tongue has the same effect. All the muscles controlling the lower jaw ought to be relaxed or free.

The man who talks through his teeth, does so with a tight lower jaw.

The use of the lips and the tip of the tongue is of course important in enunciation, and to an extent, in the shaping of the resonator, but as they have less hygienic significance, we will not stop to discuss them.

The Hygiene of the Voice

We have tried to suggest the different activities of the voice and to show their interdependence, one upon the other, that its hygiene might be more evident. We shall take up its hygiene in the same order in which we have discussed its mechanism, though we shall find the relationship between parts is so close, it is difficult to consider one without considering its effect upon another.

First of all, let us note the difference between the act of singing and of speaking. The same mechanism is used in both and so far the two have been considered as one; but, if we may put it in a broad way, singing is the much more violent exercise of the two. The essential difference is this: in singing, we sustain vowels longer and cut consonants shorter; from the hygienic point of view, this is the only difference, but this implies greater breath power and control, and greater tension of the muscles in the larynx. In learning to sing, the problem is to hold the muscles steady. This greater strain, which, even in the most cultivated singers must exist, makes of singing a power for good on the one hand, and of evil on the other. For good, in that more air is taken into the lungs and the lungs are more nearly emptied; the muscles of the throat, if properly developed, gain in strength and in endurance; there is in addition, a psychic effect from wholesome singing, which is good for the organism. All this, Baginsky says, makes of singing a splendid gymnastic exercise. However, if the strain is too great, if the lungs are weak or not well developed, if there be chest troubles, if the muscles of the throat should be inflamed, then singing, at least for any continued duration, may be a positive injury. In other words, in the strong as in the weak, over fatigue is always to be avoided. This is simple enough, but an hygienic law that is too often entirely disregarded.

It should not be forgotten that in singing or in public speaking, the air strikes through the vocal cords under certain tension differences, than in ordinary breathing; also, the inspiration is more rapid and the act of expiration more prolonged; which means that more air is passing through than under normal conditions. Baginsky lays great weight on this. He says, "This influence is shown through the cooling

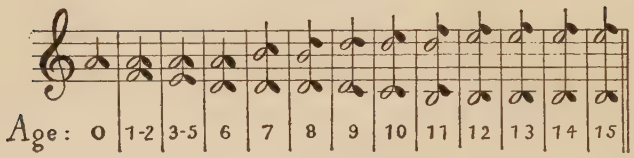
and drying of the vocal organ; the compressed air possesses a higher temperature and a higher saturation point; it becomes filled with moisture from the mucous membrane; the louder one speaks or sings, the dryer the atmosphere of the room, the greater the demand on the mucous membrane for moisture, and so, even many practiced orators like to have a glass of water at hand while speaking.'' There are other influences, however, which contribute to this throat dryness; straining of muscles means greater heat, perhaps congestion; nervousness is another factor. Ordinarily, if the voice is used properly, and the body is in good condition, the secretions of moisture are sufficient. Much water drinking while speaking is a habit, often unnecessary, and from the point of view of effect, an unfortunate one.

It hardly seems necessary to say that the air should be pure, free from dust; that the air should be of the proper temperature, neither too warm nor too cold; that in any case, it should be warmed and filtered through the nose, though the latter is impossible at times, while actually singing or speaking. One hesitates to say that the clothing should not be too tight, or bands or collars about the neck, too close fitting. These are the self-evident things, in every book, yet of the utmost importance.

The hygiene of the vocal cords is one less frequently discussed, probably because it is more difficult. There are two elements to be considered: (1) The initial attack of the tone; when the attack—*i. e.* the beginning of the tone—is in the larynx, as when we say ''e'' as pronounced in ''ear,'' it is called the ''*Coup de glotte*'' or stroke or shock of the glottis. ''This use of the voice, if persisted in,'' says Curtis, ''Gives rise to what is called singer's 'Nodules:' the vocal cords assume a convex contour of the margins, tending to converge in the middle; sometimes a nodule appears on one or both of the cords. Either the cords are being used with insufficient tension, or the internal adjustment by the thyro-arytenoid muscle is faulty, for the latter condition would cause an improper plan of vibration.'' On the other hand, if the attack be breathy, such as one produced by forcing the breath through the cords, following with the sound of long ''o,'' the cords often assume a concave contour of their margins. Such are the inevitable results of guttural, throaty, breathy speaking or singing. They can only be avoided by a smoother attack and one farther forward in the mouth, with due attention to breath control. The French singers last longer than any other singers in the world. It is largely the result of the fact that the very production of the nasal sounds in their language, preclude the attack on the glottis.

The second factor in the hygiene of the vocal cords, is the forcing of the singing voice beyond the proper register limits. Suppose we say, arbitrarily, that the upper limit of the chest register is "a," (second space), this, then, will be the lower limit of the middle register. Now, it is possible to force the chest register four or five or even six notes higher; likewise, the middle register can be used below "a," its lower boundary. The same holds true with the upper boundary of the middle and the lower of the head register. *The danger in forcing is always in going up, never in coming down.* In other words, it does no damage to take an upper register below its lower boundary, but it is dangerous to take a lower register above its upper boundary. For this reason, all good voice builders commence with the top story and work down. There are voice teachers who never mention registers to their pupils; they try to avoid register difficulties by insisting upon easy singing, under which conditions the register adjustments usually take care of themselves. It is easy to see that if the vocal cords are strained by a column of air forced against them, they cannot act normally. The two rules for the laryngeal hygiene of singing are therefore: (1) sing easily, without strain or effort; (2) avoid forcing the upper notes of the different registers. It is difficult to obtain these in the schoolroom; children naturally sing with all their little mights, and there are teachers and Sunday school superintendents who are continually striving after boisterous singing. If they could only learn that an ounce of sweetness is worth many pounds of noise, many a child's voice would be saved.

With children, also, it is important to keep well within the range of their voices. It differs, of course, in individuals, and unfortunately we have few scientific studies of large groups of children. By far the best, both as to method and number of subjects, is that of Paulsen. He, with the aid of a singing master, tested 250 individuals in each school class in Kiel; a total of 2,685 boys, between six and fifteen years, and 2,259 girls from six to fourteen; in all 4,944. He used only children of normal health and recorded only the low and high notes which could be produced with ease. Gutzmann, with the aid of Flatau, examined 575 children; and in 166 cases they used the laryngoscope also. They found their conclusions in agreement with Paulsen (8, p. 52). They also studied the range of the child's voice from birth to the sixth year. Here their work practically agrees with Garbini. Gutzmann prepared the following diagram, using his own results up to the sixth year, and Paulsen's from that year on. It shows the pitch of the child's voice in 75 per cent. of cases. The half notes represent the range of the boys' and the quarter notes, that of the girls' voices.



The range of the child's voice (after Gutzmann).

If these results are true for American children, the music offered them in the first four grades is certainly too high in pitch. It is quite true that 25 per cent. of the children have a greater range; but great harm may accrue to the majority, by forcing them to sing notes, easily possible, only to a few.

Before leaving the subject of the hygiene of the larynx, it may be well to add that speakers usually use only the middle register, and very few notes, so there is no danger of register forcing. Occasionally we hear a man growling in what the Germans call the *Strohbassregister*—really, the low notes of the chest register. It is bad, of course, both for speaker and listener; for the speaker, because the vocal cords are not tense enough and the glottis is so open that the tones must be more or less breathy; for the listener, because the low notes do not carry so well. It is never necessary for a speaker, no matter how large the hall, to shout or to force; raising the pitch a tone and adding nasal resonance will fill the largest audience room.

We come last of all, to the hygiene of the resonance cavities, and here the subject cannot be treated adequately, because it is too extensive for this study. It includes the hygiene of the pharynx or the back part of the throat, and of the nasal cavities. The teeth, especially the incisors, are important; for the best tone they should be even, and there should be no vacancies.

In the throat, the uvula should not be too long; if, in its natural position, it irritates the anterior surface of the tongue, a physician—a specialist if possible—should be consulted; it is a very simple operation to shorten it.

The tonsils often give trouble; if they are easily infected, and frequent attacks of quinsy and tonsilitis result, a physician should again be consulted as to their removal. Enlarged tonsils often interfere with the proper use of the voice; oftentimes the voice is improved by their removal because the cavity is enlarged, resulting in a rounder, fuller tone. The operation, again, is a simple one. Behnke says, "It is not so

much the size of the tonsil that is the cause of local defect, as extension of its inflammation to neighboring tissues, which causes faults in the muscular action of the pharynx. The voice becomes more or less husky, toneless and easily fatigued. Articulation is always impaired, the sufferer speaking as if with a full mouth. This condition alone, may account for stuttering or other special defect in some cases'' (3, p. 280).

Pharyngitis—inflammation of the pharynx—better known, perhaps, as common sore throat, is indeed more common and less serious; but ''It may assume a graver type, and all the characteristics of an inflammation, acute or chronic.'' It is not always confined to the pharynx but may spread to the naso-pharynx, and to the soft palate. It is doubtless an infection, which means that a frequent cleansing with an antiseptic solution would prevent many a sore throat. Perhaps the most common disorder of voice users is the chronic granular pharyngitis or ''Clergyman's Sore Throat.'' This is again probably an infection which is made easy and aggravated by constant forcing, straining and congestion of the muscles and of the membranes. The symptoms of sensation are a feeling of pricking, heat, and a slight soreness in the throat. A short cough is also sometimes present. The voice is, usually, more or less hoarse, and singers complain of a loss of their high notes; later there arrives a period of complete suppression, at first of the singing and then even of the speaking voice. This is due, say Brown and Behnke, ''Either to want of control over the voluntary muscles of articulation, or to loss of power in the automatic laryngeal muscles; sometimes to both combined.''

The hygiene of the nose is a subject in itself, but extremely important for the voice user. In addition to its office of warming, moistening and purifying the air we breathe, an important function in itself, it aids in both speaking and hearing.

First of all, the passages should be entirely open. They become closed, or partly closed, in several ways; (1) by deflection of the septum, (2) by enlargement of the turbinated bones, (3) by swelling of the mucous membrane, (4) through catarrhal troubles, (5) through abnormal growths such as polypi, adenoids, etc. In any difficulty of breathing a physician should be consulted. The septum may be displaced through accident, or through the waywardness of children in forcing small objects into the nose; the defect is easily remedied. The surgeon can also easily saw out portions of enlarged bone, or reduce enlarged tissue. It is impossible, here, to treat adequately the subject of catarrh. Neumayer says dust is the great source of such infection; some specialists say that if there is a proper opening through the nose,

catarrh will disappear. In other words, it is in the final analysis a matter of inefficient drainage. If this be true, such minor operations as have been mentioned, will greatly assist in remedying catarrhal difficulties. In addition to partly closing the resonating space, catarrh works a serious injury to the quality of the membranous lining, which, as we have seen, is another matter of importance.

Of the abnormal growths, polypi are small, soft structures, which grow like parasites on the membrane, especially, in the upper part of the naso-pharynx, and in the nasal passages. So far as we can learn, their greatest evil consists in occupying space which is needed; they are easily removed. Adenoids are much more harmful, and prey especially on children. Dr. Burnham has shown that they may not only be the cause of deafness, interfering with both the mental and physical life of children, but they may be responsible for many defects in articulation. Quoting from Dr. Hagelin, he says, some children, having adenoids, "have difficulty in learning tolerably correct articulations, and of keeping them in memory, if once acquired; . . . . they substitute back vowels for front, and there is a general lack of innervation in all their attempts to speak" (4, p. 165). Parents and teachers should acquaint themselves with the symptoms of these vicious growths; the operation is not difficult and usually successful.

Perhaps enough has been said to show that the true hygiene of the voice is that of the lungs, the larynx, the throat, mouth, and nose. The ear might well be added, and it would be easy to show effects on the voice of poor digestion and of fatigue in general. Thus, it will be seen that our good friend, Dr. Hippocrates, with whom we began, was not far wrong when he judged a patient's condition by the sound of his voice.

Summary.

From early times, the sound qualities of the voice have been regarded as an index of general physical and nervous conditions.

The mechanism of the voice includes three factors, corresponding to necessary parts of a musical instrument: (1) the organs of respiration—the bellows of the instrument; (2) the vocal cords—the vibrating reeds; (3) the chest, mouth and nasal cavities—the resonance chambers.

The problem of the organs of respiration is one of control, involving the use of all the air space in the lungs and the economic expenditure of breath. Hygiene here involves attention to the general physical condition, that over fatigue may be avoided. The air should be of proper temperature and suf-

ficiently moist. Tight bands about the waist and neck should be avoided.

The correct use of the vocal cords is conditioned by the avoidance of strain or effort, to allow the normal adjustment of the different registers. Easy singing or speaking should be the rule. It should be remembered that the danger in forcing is in going up the scale, never in coming down.

Most observers agree that the voice should not be used in singing during the period of change, especially if there be a break in the voice. They also agree that, as a rule, vocal study in either sex, should not be begun until after puberty.

Careful studies in Germany indicate, that in 75 per cent. of cases, the child six years of age has a range of only five tones, and that the maximum range of the child is not reached until the twelfth year.

It is of the utmost importance to make every possible use of the mouth and nasal cavities for resonance; to this end the nasal passages should be clear of any obstruction, and such foreign growths as polypi and adenoids should receive medical attention.

Bibliography.

1. Baginsky, Adolph. Handbuch der Schulhygiene. Stuttgart, 1900, Vol. 2, pp. 102-119.
2. Behnke, E. and Brown, L. The child's voice. Chicago, 1885, 109 p.
3. Brown, L. and Behnke, E. Voice, song and speech. London, 1904, 246 p.
4. Burnham, Wm. H. The hygiene of the nose. *Ped. Sem.*, 1908, Vol. 15, pp. 155-169. (Bibliog. of 19 titles.)
5. Curtis, H. H. Voice building and tone placing. N. Y., 1896, 215 p.
6. Gerber, P. Die Menschliche Stimme und ihre Hygiene. Leipzig, 1907, 116 p. (Bibliog. of 60 titles.)
7. Grützner, P. von. Physiologie der Stimme und Sprache. In Herman's Handbuch der Physiologie. Leipzig, 1879, Bd. I, Theil 2, 235 p.
8. Gutzmann, H. Physiologie der Stimme und Sprache. Braunschweig, 1909, 208 p. (Bibliog. of 263 titles.)
9. Hall, G. Stanley. Adolescence. N. Y., 1904, Vol. 2, Chapter 9.
10. Mills, Wesley. Voice production in singing and speaking. Philadelphia and London, 1906, 282 p.
11. Neumayer, Hans. Hygiene der Nase des Rachens und der Kehlkopfes. Stuttgart, no date, 160 p.
12. Paulsen, E. Über die Singstimme der Kinder. Pflüger's Arch. LXI, 1895, pp. 407-476.
13. Scripture, Ed. W. The elements of experimental phonetics. N. Y., 1902, 627 p. (See esp. Chaps. 16-20.)

GENERAL OUTLINE OF THE NEW CHILD STUDY WORK AT CLARK UNIVERSITY

By G. Stanley Hall

A. CHILDREN'S INSTITUTE

Until the organization of this Institute by the Trustees of Clark University in 1909, there was nowhere in the world an institution devoted to the collection, diffusion and increase of the scientific knowledge of childhood, which during the last quarter of a century has been so actively and fruitfully studied. As this work especially began in the United States, although it is now cultivated in every land, and as during the last twenty years between two and three hundred investigations represented by as many books and published memoirs have emanated from Clark University, it seems fitting that the first installation of it, which had been under consideration for years, should here have its local habitation and its name. Other names have been suggested, such as the Paidological Bureau, The Institute for Scientific Study of Childhood, Institution for Applied Experimental and Genetic Psychology, etc.

I. The first task is the *collection of literature* upon the subject. To this our library has for years given much attention and has printed a copious bibliography upon the subject with many hundred titles each year since 1895. While not exhaustive, it is believed that our collections here are more comprehensive than anywhere else. They include journals exclusively or mainly devoted to different aspects of this subject. It was necessary, however, to do more. Accordingly an expert, Dr. Smith, was appointed in the spring of 1909 to collect by correspondence leaflets, constitutions, and reports from the several score types of child welfare institutions, to classify and make this literature generally accessible. The use that has been made of it both by personal visitation and the taking out of material and the very extensive correspondence involved is set forth in Dr. Smith's report below. Again, in the two years ending 1905, no less than seven hundred and fifty-three school bills were passed by the different state legislatures, to say nothing of those pertaining to orphans, delinquents, waifs, etc. All this legislation should be gathered and made available. Here too might begin correlation looking toward a general organization of organizations. Correspondence, which is now rather voluminous concerning children, belongs here, and per-

haps even a library of standard reading for children; there might at any rate be a standard collection of books concerning children, with descriptive catalogue. Ideally, all this material should be loanable even at a distance. See the report of the Librarian, *Dr. L. N. Wilson*, also the following report of his assistant Dr. T. L. Smith.

II. NATALITY. The genetic and the logical first condition is to have children born, and well born. The declining birth-rate in nearly every civilized country, and especially in parts of our own, race suicide, late marriages, the decline of nursing children and the enormous mortality directly due thereto, sexual hygiene, the general principles of heredity and the scientific aspects of stirpiculture, are now accessible in various eugenic movements, societies, publications and journals in various lands. This fundamental view-point touches the very deepest interests of mankind and the basal conditions of society. The world has recently awakened to this subject as never before and it is obvious that this field should be cultivated as a special department in an institution devoted to childhood. *Mr. De Busk* will represent this topic here next year.

III. HEALTH AND DISEASE. Here belongs the hygiene of the nursery and the home, of the school of all grades from the kindergarten up, studies of the age of greatest liability and most contagion for all the epidemic diseases of childhood, the medical aspects of gynecology and pediatrics, the latter of which is now having a rapid and needed development in medical education; the alarming mortality of children under one year of age and the unwholsome condition of city life, the problems of hygienic and economic study of lighting, heating, ventilation, especially of schools, the recent special attention given to tuberculous children, sexual infections of childhood and youth; the medical inspection of schools, the collection of hygienic apparatus in a museum for use and demonstration, the gathering of the manifold statistics in this field,—these will show its dimensions and importance. Here belong, too, the qualifications of nurses, midwives, and the whole milk question, so far as relates to the child. These latter questions have each been the theme of careful, local, social surveys here during the past year. See here the report of *Professor W. H. Burnham.*

IV. SUBNORMAL CHILDREN. At least one per cent. of all the children in our schools are distinctly subnormal. The causes of their condition as, *e. g.*, in the well-known cases of adenoids and sometimes of the care of teeth, eyes and ears, are sometimes removable. The schools for imbeciles, especially for those of higher grade; the training of the blind and the deaf, to the latter of which the new Volta Bureau is devoted; the very wholesome pioneer work already established in half a dozen centres

in this country,—constitute one of the most interesting sections of paidology. See *Mr. Chase's* report below.

V. CRIME. Recent statistics of early delinquency, the juvenile court, the problems of detention, probation, institutions and their organization, and the regimen and education given in them, is another department which has its own literature, which makes it a department of applied ethics, of practical morality, a study of which is not only of high scientific, but of the greatest social and moral advantage. Several special local studies have been made in this field, and a special appointee here, who could give all his time to the study of causal and preventive agencies here, *is desired.*

VI. VICE. Here again we have sad and almost appalling statistics concerning the sexual errors and even aberrations of childhood and youth. The world has awakened to-day as never before upon this subject, and the field here is of the very richest and most absorbing psychological interest and is vital to racial perpetuity. It is of course closely connected with department II above. Here several interesting studies have been made.

VII. CHILD LINGUISTICS. For many years there have been very careful observations and records of the growth of language in the child, who appears to start to evolve a language of its own and is early caught up in the speech of the environment. The increase of vocabulary, the evolution of each of the parts of speech, the development of the powers of pronouncing the various sounds and words of our language, the later prevalence of slang, the practical psychology of learning modern languages whether ancient or modern,—these are topics which not only shed scientific light upon phonic and philological laws and upon the origin of speech in the race, but furnish the basis for a more exact application of this knowledge in the field of pedagogy, where it is now greatly needed. See *Dr. Magni's* report below.

VIII. ANTHROPOLOGICAL AND SOCIOLOGICAL. Careful studies of growth in height, weight and other dimensions of limbs, brain, muscle, dexterity, influence of climate, season, country and city upon health and school work, child insurance, their capacity as witnesses, the age of majority and the period before birth when the law regards the child as "quick," the normal age for being weaned, teething, taking up each study by the right method, the upper limit of the age of attendance, the age of consent, the history of the way children have been treated in the past and are regarded now in families of different nationalities,—all these make up a department not yet represented here.

IX. EXPERIMENTAL DIDACTICS. Many special investiga-

tions have been made to discriminate between the greater or less efficiency of different methods in teaching children to read, and some definite results have been reached. Many investigations under exact conditions have shed much light upon the psycho-physiology of writing, also of elementary number and arithmetic, to say nothing of geography and other subjects, which can be made objects of research under controlled conditions. Moreover, the modes of treating questionnaire and other statistical material derived from the study of large numbers has a logic all its own. This work is designed to give education a more scientific as well as a more professional character. For what is doing here, see the report of *Dr. A. E. Tanner* below.

X. CHILD LABOR AND INDUSTRIAL EDUCATION. The country is passing through an important era in its educational history in this respect. The vast majority of children leave school at or before the close of the sixth or seventh grade and before their services are of much value in the trades. In some places they still work in tender years and under very unhygienic conditions. Many children fall a prey to all the dangers of idleness. Others waste the most plastic years of life in drifting from job to job when they might, if proper continuation schools were accessible, be fitted for life. The needs of the masses of girls and especially of boys, which are not provided for by Sloyd, by so-called manual training, or by technical schools, constitute one of the gravest problems of present day education, a problem connected with the playground and many other movements. This department is *not yet organized.*

XI. MORAL AND RELIGIOUS EDUCATION. There are so many and diverse new departures in this field that a clearing house function where the various movements are brought together and compared seems necessary. We are rapidly gaining in our understanding of the moral nature of childhood in its various stages and also how the child reacts to religious influences. Here, too, belong among other needs the practical aspects of the new sex education that, since the Mannheim Conference in 1907, is being introduced in so many cities and even churches and elsewhere. Its work connects closely, of course, with departments V and VI above, and has its own unique possibilities. Here belongs the study and the question of how far, if at all, religion is necessary or can be dispensed with in moral training, how both may be taught in school, Sunday School problems, the pedagogy of the Bible, and the very interesting theme of mission pedagogy, which is now looming up in various forms and aspects.

XII. PEDAGOGICAL MUSEUM. Dr. Andrews has shown

what pedagogical museums in Europe are and can do and we are beginning to understand them here. Illustrative apparatus in the way of charts, games, reading and reckoning devices, geographical and historical appliances, educational toys, and illustrative apparatus generally in the sciences and in other departments, without which a laboratory or even a school building is a corpse without a soul,—these things are being collected and will have next year a large room of their own in which Saturday lectures to teachers with demonstrations can be given.

Of the above departments, six are now in operation; and it is hoped the others will be established during the next academic year.

The purpose of this work is as follows:

A. To *offer courses of conferences* or lectures in each of the above fields. These are given this spring in the departments organized and will be more extended later. They constitute a unique educational group in which scientific child study and the practical movements of child welfare will be brought together. The conferences will be open to special students and will make copious use of such illustrative material as is at hand and of the literature provided.

B. The internal problem here faced is one of *co-ordinating the scientific work of experimental and genetic psychology with the sources of child welfare agencies now at work.* This is perhaps the most difficult of the tasks before the Institute; but it is the most important and its solution should be in the highest degree beneficent. On the one hand paidology cannot fail to be greatly enriched by gathering the accumulated but as yet entirely unco-ordinated results of the knowledge which practical workers in the field have acquired of children, their ways and needs. There are problems that arise out of their work that demand special research on the part of experts. It is hoped that these various organizations will either purposely formulate and pass in questions they desire investigated or, where this is not the case, that their problems may be found, defined and formulated by specialists here, who will study modes in which they can be guided to furnish help to make ways of service more effective.

C. Our most serious endeavor at present is to compile or *outline the history of each class of society or institution* and to find in the voluminous results of child study data already established which can be proposed to workers to aid them each in their several fields. If this reciprocity or mutual help can be established and child philanthropy given a more professional, scientific character with the already accumulated resources, the time will come we believe when one of the chief ends of

the institute will be accomplished. The sad fact is that hitherto the field workers and scientific investigators have had but few points of contact and known very little and indeed have sometimes lacked due appreciation of each other. It is hoped that something may here be done to ameliorate this condition and to this end we invite co-operation in every field.

Our workers would all be in the heartiest sympathy with the establishment of *a Children's Bureau in Washington as a national institution, provided only that scientific paidology be adequately represented in it.* Such an institution chiefly in the interests of child labor, playgrounds or any or all other philanthropic efforts for the betterment of child life, divorced from science, would be unfair to workers in the field whose efficiency and whose professional status would suffer without, and be distinctly augmented by, such affiliation as is above described. The most intelligent friends of the Indian deplore the almost water-tight compartment which now exists between American anthropologists who have studied and known the Indian language, industries, organization and ethnology generally, and the Indian Bureau which only looks after his practical needs. It is unfortunate even for the latter that these two departments are lacking not only in co-operation but even in sympathy and respect for each other's work. Similar segregation between paidology and child welfare service would also be a great misfortune for the child.

The following reports set forth the history, work up to date, plans and facilities open to students and workers, also a further description of courses.

REPORTS AND STATEMENTS OF DEPARTMENTS

I. LIBRARY FACILITIES FOR THE WORK OF THE CHILDREN'S INSTITUTE AND THE NEW BUILDING FOR THIS WORK.

By Louis N. Wilson, Litt. D., Librarian

In view of the fact that the child study movement had its inception at Clark University and that more work has been done here in this field than perhaps anywhere in this country or in Europe, the Library has for many years specialized on the literature of this and related subjects. As early as 1897 the librarian commenced the compilation of all the more important books and articles in the field, and it was published in the *Pedagogical Seminary* for April, 1898. This first installment was brought down to the end of 1897 and in each subsequent year the literature of the previous year has appeared in that periodical.

The bibliographies for the years 1908 and 1909 have not yet been published, but it is hoped they will be printed before the end of the academic year. The total number of titles thus listed in the thirteen years is 5,427.

The Bibliography is indexed by subjects each year and has proved a valuable aid to workers in this field. It is now issued as a publication of the Library.

It has long been our ambition to enlist the co-operation of students in education, psychology, psychiatry, neurology, religion, etc., in the University departments, with a view to a careful listing of all magazine articles in these fields from month to month. Under this plan, which we hope to put into operation next year, the cards would be made available at once and lists posted for the benefit of those interested. We are also anxious to increase the annotated titles. A mere title is often of little value, but one or two sentences touching upon the heart of book or article adds greatly to the value of such a list and it is from the students of the University that these notes should come. The student himself who spent an hour or two a week in merely glancing over the periodical literature and indicating such articles as are worth listing would be amply re-

paid in the larger outlook he would have and in acquiring the habit of keeping in touch with the printed matter just from the press, representing, as it does, the very latest contributions of the ablest minds in science.

Mr. Harry W. Chase is at present engaged in the preparation of an annotated bibliography of the Freud School, which the Library will later issue in printed form.

The Library has also for many years past, preserved lists of bibliographies on all subjects which have been studied here and, in addition, keeps a list of all printed bibliographies, however small, that are to be found on its shelves. These bibliographies range from a dozen titles on a subject to many hundred, the total number of titles rising over 10,000.

The following list will give some idea of the variety of subjects covered by the unpublished bibliographies:

Special Bibliographies

Advertising
Agricultural education
Ambidexterity
Arithmetic
Aussage
Auto-intoxication
Blind
Character
The Child (general)
Child labor
Child linguistics
Child thought. (Thinking and reasoning)
Child's speech
Children's lies
Children's literature
Children's vocabularies
Coeducation
College administrative problems
College athletics
College Life
Collections
Corporal punishment
Dancing
Deaf blind
Dementia præcox
Dreams
Dreams of the insane
Education of girls
Education of primitive races
Education, Psychology of
Educational values
Election of senators
Electromagnetic mass
Emotions
Emulation
English, Psychology of
English education
English universities
Ether
Eugenics
Experimental pedagogy
Fetichism
Foods and diet
Forestry
Formal training
Fraternities
Freud School
Hand
Health inspection
Heredity
High school
High school science
Hygiene of foods
Imagination
Imitation
Industrial education
Instinct
Institutional church
Katatonia
Keller, Helen
Kindergarten
Left-handedness
Magic
Mediæval universities, Rise of
Medical inspection
Memory
Memory, Biological
Memory training
Mental deficiency
Mental imagery
Miracles of healing

Moral and religious training
Municipal government by commission
Municipal ownership
Negro
Number forms
" teaching
Nutrition and thought
Origin of life
Parrots
Play
Playgrounds
Poetry of architecture
Pragmatism
" Criticism
Prenatal conditions
Psychoanalytic method
Punishment
Questionnaire method
Radiation
Reading
Relativity
School and home
School gardens
School sessions
Sensations
Sex
Speech
Story-telling
Sucking
Suicide
Teachers' salaries
Temperament
Twins
Vocabularies
Voice
Woman suffrage
Writing

In connection with his weekly Seminary, Dr. Burnham has insisted that each student in presenting a subject for discussion shall prepare a bibliography at the library. Copies of these are distributed to the class and a set bound up for library reference. A list of the subjects thus treated since 1902 may not be out of place here.

Bibliographies on Educational Subjects presented at Dr. Burnham's Seminary, 1902-03

Animal pedagogy
" psychology
Arithmetic, Teaching of elementary
Geography
Germany, Secondary schools of
Heredity
Interest and education
Kindergarten
Language, Early training
Languages, Methods of teaching modern
Myth in school instruction
Nature study
Priest and teacher
School discipline, or The training of character
Secondary schools (U. S.), The mother tongue in
Vittorino da Feltre and other humanist educators of the first humanist period

1903-04

American colleges, universities and professional schools
England, Elementary schools of
" Secondary schools of
" Training of teachers in
English universities
France, Secondary schools of
French elementary schools
" universities
German secondary schools
German universities
Germany, Training of elementary teachers in
Germany, Training of secondary teachers in
Greece, Education in ancient
Japan, System and present status of education in
Die Volkschule

1904-05

Academies and learned societies
Black Death, Effect on education
Comenius
Dewey, John
Educational progress in England during the Renaissance
English reformation
English universities

Froebel
Hegel, Pedagogy of
Influence of the great geographical discoveries
Jansenists and Port Royal
Jesuits
Locke, John
Montaigne, Michel Eyquem de
Neo-Humanism
Pestalozzi as a social reformer.
Rabelais, François
Reformation in Germany
Renaissance in France
" in Germany
" in Italy
" in the Netherlands
" in Spain
Women of the Renaissance

1905-06

Acquisition of technical skill
Animals, Learning process in
Children and adults, Differences between
Experimental pedagogy
Experimental studies in arithmetic
Experimental studies in kinder-dergarten occupation
Experimental studies in reading
" " in singing
" " in writing
" " of imagination
Experimental studies of memory and habit
Experimental studies of suggestion
Feeble-minded, Learning process in
Hypnotism
Intelligence, Tests of
Lay's experimental studies
Motor training
Questioning, Psychology of
Sex-differences
Spelling
Subconscious, Psychology of the

1906-07

Board schools
Cambridge
Education, Arnold's Influence on.
England, Great public schools of
English education, general books of reference prepared by the Director of Special inquiries and reports. Bd. of education library. Whitehall, London
English education, English home as a factor in
English education, General works of reference on
English schools, Early
Hegel and Harris
Huxley, Thomas Henry
Oxford
Plays and physical education
Renaissance, Women of the
Revival of learning in England
Ruskin, John
Schools, Codes of regulations for elementary
Sozial-Pädagogik
Spencer
Voluntary schools

1907-08

Campanella
Comenius
Education, General history of
Education, History of
English education in the later Middle Ages
French academies
Goethe
Guilds of the Middle Ages
Industrial awakening in Italy
Italian Renaissance
John Locke
Loyola, and the Jesuits
Periodical references
Realism, Beginnings of
Reformation in Germany
Renaissance in France
Renaissance, Private tutor at the
Reformation in Scotland
Scotland, Education in the 15th, 16th, and 17th centuries
Wandering scholars

1908-09

Administration, Experiments in city school
Animals, Learning process in
Arithmetic, Primary
Association experiments
Attention

Attention. (Supplementary bibliography)
Dewey laboratory school
Drawing, Experimental studies of
Formal training
Habit
Home conditions, Investigations of
Imagination, Experimental studies in
Imitation
Memory training and economical methods of learning
Open-air schools
Pedagogy, Experimental
Physical training
Pupil self-government
Singing, rhythm, tone and imitation
Spelling
Suggestion
Suggestion, Experimental studies in
Technical skill, Acquisition of
Testimony, Experimental studies in
Testimony, Experiments on children's

The Library also possesses the following Master's Theses in unpublished form:

ARNOS, E. M. Should inequalities of wealth be regulated by a progressive income tax? 1908. 40 p.
BACON, C. W. A study of the determination of carbon by combustion. 1907. 27 p.
BALDWIN, F. M. Daily life of the earthworm. 1907. 19 p.
BARON, A. H. N. Juvenile delinquency in Worcester, Mass. 1906. 33 p.
BEESON, W. J. The child and his religious development. 1908. 21 p.
BRAMHALL, R. I. The Congo in American diplomacy. 1906. 62 p.
BRAMHALL, R. I. Origin and growth of the manor. 1906. 51 p.
BROENE, JOHANNES. Early philosophy of Friedrich Nietzsche. 1907. 56 p.
BRUNER, JESSE. Constitutional vitality and vigor of offspring and the physiological conditions which influence it. 1907. 9 p.
BUTMAN, C. A. Zeeman effect treated historically and experimentally. 1909. v p.
CARROLL, C. S. Catholic confessional. 1909. 158 p.
CHIDESTER, F. E. Biology of the crawfish. 1908. 29 p.
CONKLIN, E. S. Collegiate religious education. 1909. 109 p.
COOKE, F. N., Jr. Study of the causes of poverty in Worcester, Mass. 1906. 24 p.
CRUM, LUCETTA. Story-telling. 1909. 100 p.
CURTIS, E. W. Dramatic instinct in education. 1908. 47 p.
DISNEY, C. E. Histology of certain insect galls of the oak. 1907. 20 p.
DIXON, E. M. Problem of the cat in relation to bird life. 1907. 28 p.
DOWD, J. E. Sacrifice of the mass in the Catholic church. 1909. 81 p.
DOWNEY, H. M. Ambition. 1909. 84 p.
DROWNE, G. L. Essential elements of poetry. 1906. 96 p.
ELLISON, LOUISE. Psychology of definition. 1907. 35 p.
ESTABROOK, A. H. Present status of the English sparrow problem in America. 1906. 37 p.
GATES, B. N. Cellular structure of the peach. 1906. 6 p.
GREENWOOD, R. R. Ibsen; the man and his work. 1908. 133 p.
HARRINGTON, E. A. Quantitative observations on the vibrations of a tuning-fork. 1906. 26 p.
HÉLIE, EUCLID. [ism. 1909. 57 p.
KANDA, SAKYO. Examination of Buddha's atheism and non-âtman-
KAYLOR, M. A. Feelings, thought and conduct of children toward animal pets. 1909. *Ped. Sem.*, 1909, v. 16, p. 205-239.

KEITH, W. H. Russia's expansion and development in Asia. 1906. 35 p.
KRANZ, A. L. Studies in the development of student honor and self-government. 1909. 80 p.
LIE, O. K. On the reduction to the canonical forms of the equations of transformation groups with continuous parameters. 1908. 56 p.
LYFORD, C. A. Study of the dissociation products of bovine hæmoglobin. 1906. 21 p.
MCCURDY, J. H. Adolescent changes in heart-rate blood-pressure. 1909. 19 p.
MCNAMARA, F. P. Marriage and divorce. 1908. 112 p.
MATHENY, W. A. Effects of alcohol on the life cycle of paramecia. 1909. 14 p.
MILLS, O. W. Biology of Pellia epiplylla. 1908. 28 p.
MONTGOMERY, W. J. On the smallest number of inflexions on a non-singular odd branch of an algebraic plane curve, etc. 1908. 25 p.
NAKAMURA, YASUMA. Formation and genesis of suicidal impulse. 1909.
NICKERSON, C. B. Study of the solubility and reduction products of potassium chlorplatinate. 1907. 16 p.
OSBORNE, C. A. The cat, a neglected factor in sanitary science. 1907. 43 p.
PORTER, T. L. A study of the forced vibrations of a soap-film membrane. 1908. 39 p.
POWER, T. P. A precise qualitative study of the phenomena of direct esterification.
RICHARDSON, C. E. Unrest in India; its causes. 1909. 84 p.
RUSSELL, J. A. Religious crisis in France; its history, causes and results. 1908. 126 p.
ST. JOHN, E. P. A genetic study of veracity. 1908. 25 p.
SALMON, J. J. Saint invocations and religious memorials in the Catholic church. 1909. 91 p.
SCHÜRMANN, H. H. Dramatic characteristics of Richard Wagner's tetralogy Der Ring des Nibelungen. 1909. 29 p.
SIDDELL, W. G. The juvenile court; its work, development and possibilities. 1908. 144 p.
STEVENSON, T. J. Instrument for the study of the time relations of binocular vision. 1907. 11 p.
STEVES, G. H. Child labor. 1908. 144 p.
WALLACE, E. M. Comparative study of motor nerves and nerve-endings by the Sihler method. 1908. 10 p.
WATANABE, JUN. Relation of trusts to labor unions. 1907. 31 p.
WEBB, R. L. Psychological novel. 1906. 19 p.
WIGGAM, AUGUSTA. Contribution to the data of dream psychology. (Repr. fr. *Ped Sem.*, June, 1909, v. 16, p. 240.51.)
WRIGHT, C. D. A quantitative experimental investigation of the steric hindrance hypothesis.

Among its 500 or more periodicals the Library contains all those dealing with child study in any scientific way. The best periodicals devoted solely or largely to this subject are:

Child Study Periodicals

BULLETIN DE LA SOCIÉTÉ LIBRE pour l'étude psychologique de l'enfant. Félix Alcan, 108 Boulevard St.-Germain, Paris. 10 Nos. yearly. Annual subscription, 3 francs. Founded 1900.
CHILD LIFE. Pub. by Froebel Society of Great Britain and Ireland. George Philip & Son, 32 Fleet St., London, E. C. Annual subscription, 4 s. Founded 1899 n. s.

CHILDREN'S CHARITIES. (Has Health Department.) 79 Dearborn St., Chicago. Monthly. Annual subscription, $1.00. Founded 1893.

CHILD STUDY. (Jour. of British Ch. Study Ass.) Pub. by Edward Arnold, 41 and 43 Maddox St., Bond St., London. Quarterly. Vols. 1-9 (1899-1907), under title The Paidologist. Founded 1899.

L'EDUCATION FAMILIALE. 44 Rue Rubens, Bruxelles, Belgium. 10 Nos. yearly. Annual subscription, 6 francs. Founded 1899.

L'ENFANCE ANORMALE. Bulletin trimestriel de la Société protectrice de l'Enfance Anormale. Amand Jonckheere, 115 Rue Marie Christine, Laeken, Bruxelles. Quarterly. Founded 1907.

L'ENFANT. Revue Mensuelle illustrée, consacrée à la Protection de l'enfance. 13 Rue de l'Ancienne-Comédie, Paris. Annual subscription, 7 francs. Founded

EOS. Vierteljahrsschrift für die Erkenntnis und Behandlung jugendlicher Abnormer. A. Pichlers Witwe & Sohn, Wein. Annual subscription, 10 Mk. Founded 1905.

GESUNDE JUGEND. Zeitschrift für Gesundheitspflege in Schule und Haus. B. G. Teubner, Poststrasse 3, Leipzig. Monthly. Annual subscription, 5 Mk. Founded 1901.

JAHRBUCH FÜR KINDERHEILKUNDE und physische Erziehung. S. Karger, Karlstrasse 15, Berlin. Monthly. Annual subscription, 36 Mk. Founded 1858.

JUGENDSCHRIFTEN-WARTE. Organ der vereinigten deutschen Prüfungsausschüss für Jugendschriften. Ed. Heinrich Wolgart. Hamburg-Fuhlsbüttel, Brombeerweg 41. Monthly. Annual sub: scription 1.20 Mk. Founded, 1893.

KIND UND KUNST. Illustrierte Monatshefte. Brandus 'sche Verlagsbuchhandlung, Berlin. Founded 1904, but suspended during 1907. Annual subscription, 6 Mk., with supplement, "Frohe Jugend" 8 Mk.

PEDAGOGICAL SEMINARY. Ed. G. Stanley Hall, Clark University. Worcester, Mass. Quarterly. (Clark University organ for Child Study.) Annual subscription, $5.00. Founded 1891.

THE PLAYGROUND. 1 Madison Ave., New York City. Monthly. Organ of the Playground Ass'n of America. Annual subscription, $1.00. Founded 1907.

SAMMLUNG VON ABHANDLUNGEN AUS DEM GEBIETE DER PÄDAGOGISCHEN PSYCHOLOGIE UND PHYSIOLOGIE. Editors, Th. Zeigler & Th. Ziehen. Verlag von Reuther & Reichard, Berlin. Annual subscription, 7.50 Mk. Founded 1897.

SAMMLUNG VON ABHANDLUNGEN ZUR PSYCHOLOGISCHEN PÄDAGOGIK. E. Meumann, Editor. Verlag von Wilhelm Engelmann, Leipzig. Appears irregularly and price varies. 2 vols. in print. These are child studies collected from the Archiv für die gesamte Psychologie. Founded 1904.

ZEITSCHRIFT FÜR ANGEWANDTE PSYCHOLOGIE UND PSYCHOLOGISCHE SAMMELFORSCHUNG. Ed. by William Stern & Otto Lipmann. J. A. Barth, Dörrienstrasse, Liepzig. 6 nos. yearly. Earlier vols. under title Beiträge zur Psychologie der Aussage. Annual subscription, 2.20 Mk. Founded 1903.

ZEITSCHRIFT FÜR DIE ERFORSCHUNG UND BEHANDLUNG DER JUGENDLICHEN SCHWACHSINNS. Verlag von Gustav Fischer, Jena. 6 nos. yearly. Annual subscription, 15 Mk. Founded 1906.

ZEITSCHRIFT FÜR JUGENDWOHLFAHRT IM AUFTRAGE DER DEUTSCHEN ZENTRALE FÜR JUGENDFÜRSORGE. Ed. Dr. Lindenau. B. G. Teubner. Monthly. Annual subscription, 12 Mk. Founded 1909.

ZEITSCHRIFT FUR KINDERFORSCHUNG MIT BESONDERER BERÜCKSICHTIGUNG DER PÄDAGOGISCHEN PATHOLOGIE. Hermann Beyer and Söhne, Langensalza. Monthly. Vols. 1-11 (1896-1906) under the title Die Kinderfehler. Annual subscription, 4 Mk. Founded 1896.

ZEITSCHRIFT FUR PÄDAGOGISCHE PSYCHOLOGIE, PATHOLOGIE UND HYGIENE. Editors, Ferdinand Kemsies and Leo Hirschaft. Hermann Walther, Nollendorf Platz 7, Berlin W. 6 nos. yearly. Annual subscription, 10 Mk. Founded 1899.

AGYERMEK (Das Kind). The child study organ of the Hungarian Society for Child Research. Redaktion Budapest. Contains summaries in French and German. Founded 1906.

Dr. Theodate L. Smith, who has been in charge of the special collection relating to Child Welfare during the year, has made a report of that department which appears elsewhere, but the short list of books given below may prove of service to those desiring guidance in welfare work.

Books and Articles on Child Welfare

ADAMS, M. E. Children in American street trades. (In Annals of the American Academy, May, 1905.) v. 25, p. 437-58.

ADDAMS, JANE. Spirit of youth and the city streets. N. Y., Macmillan, 1909. 162 p.

ADLER, FELIX. Moral instruction of children. N. Y., Appleton, 1892. 270 p.

American association of medical milk commissioners. Proceedings of conferences. 1907-09. 1st-3d. Cincinnati, 1908-09.

BUNTING, E. M. School for mothers. 1907. 86 p.

Charities register and digest; Classified register of charities in or available for the metropolis (London). Lond., Longmans, 1909. 670 p.

CURTIS, E. W. Outdoor schools. (American City, Nov., 1909, and Jan., 1910, v. 1, p. 115-118. v. 2, p. 33-37.)

DAWSON, G. E. Study of youthful degeneracy. (*Ped. Sem.*, Dec., 1896, v. 4, p. 221-58.)

GEORGE, WILLIAM REUBEN. The Junior republic, its history and ideals. N. Y., Appleton, 1910. 325 p.

George Junior Republic. Freeville, N. Y. Annual reports.

GORST, J. E. The children of the nation—how their health and vigor should be promoted by the state. Lond., Methuen (1906). 297 p.

Great Britain. *Parliament.* Children Act. 1908.

GUNCKEL, J. E. Boyville, a history of fifteen years' work among newsboys. Toledo Newsboys' Association. 1905.

HENDERSON, C. R. Care of dependent children. (*In his* Introduction to the study of the dependent, defective and delinquent classes. 1893.) p. 69-77.

HILL, F. D. Children of the state. Lond., Macmillan, 1889. 370 p.

International Congress for the welfare and protection of children. Reports of proceedings. Pub. triennially.

International Congress of Charities, Correction and Philanthropy. Care of dependent, neglected and wayward children. 1894.

International Congress on school hygiene. Transactions.

JOHNSON, G. E. Education by plays and games. Bost., Ginn (1907). 234 p.

KELLY, FLORENCE. Some ethical gains through legislation. 1905.

KELYNACK, T. N. (Ed.) Infancy (National Health Manuals). London, R. Culley, 1910. 186 p. A valuable shilling book containing 12 chapters by different medical men.

Kongress der Deutschen Gesellschaft zur Bekämpfung der Geschlechtskrankheiten. Sexual pädagogik; Verhandlungen. 1907. 3rd. Lpz., Barth. 1907. 1 v.
Kongress für Kinderforschung und Jugendfürsorge. Bericht. 1906.
LEE, JOSEPH. Constructive and preventive philanthropy. 1902.
MORRISON, W. D. Juvenile offenders. N. Y., Appleton, 1897. p. 1-178.
MYA, GUISEPPE. Cause e rimedii dell' alta mortalità infantile. 1905. 35 p.
National child labor comm. Proceedings of annual conferences.
National Conference of Charities and Corrections. Proceedings. 1875-1909. 36 v.
National society for promotion of industrial education. Bulletins. 1907-1909. Nos. 1-9.
N. Y. Society for the prevention of cruelty to children. Laws of the State of New York and of the United States relating to children, with notes and references. 1876.
PARSONS, BELLE R. Plays and games for indoors and out. N. Y., Barnes, 1909. 215 p.
PARSONS, FRANK. Choosing a vocation. N. Y., Houghton, 1909. 165 p.
Playground association of America. Proceedings of annual congresses. 1907-1909.
REEDER, R. R. How 200 children live and learn. N. Y., Charities Pub. Com. 1910. 247 p.
SPARGO, JOHN. Bitter cry of the children. N. Y., Macmillan, 1906. 337 p.
VANDEWALKER, N. C. The kindergarten in American education. 1908. 274 p.

NEW BUILDING

May 14, 1909, the Trustees voted to build an addition to the Library building, to be three stories high and to conform to the architecture of the present building. The size of the addition is 112 x 54 feet and it is connected with the present building on the first and second floors by a corridor 30 ft. in length. The first floor is to be used as a Library and Reading Room for the Collegiate Department, while the second and third floors are to be devoted to the purposes of the newly established Children's Institute.

The entire third floor will be used as a Pedagogical Museum. This has for the most part yet to be developed. The service which a collection of illustrative apparatus, charts, diagrams, etc., bought and made can render to education is incalculable. In Europe these institutions are centres of educational activity, loaning their material far and wide to schools much as libraries loan books, giving demonstrations on Saturdays, while the directors are always alert to find every kind of model, elementary scientific apparatus, choice school supplies, sometimes even text-books, collections and series of pictures. A school building or room unsupplied with all these labor-saving devices,

which now contribute so greatly to facilitate nearly every educational process, is almost like a body without a soul. Everything from cuts and models in wood and plaster, of utensils, houses, dress, illustrating life in ancient Greece and Rome, even to scientific toys, not excluding some sleight of hand apparatus, is now drawn upon. Our own collection in these fields, although considerable, is at present not so large as it is unique. Considerable new material is now being ordered and will be displayed.

Meanwhile we have several hundred wall charts specially made for and under the direction of the professors in the Departments of Psychology and Education which are labelled, card-catalogued, and used in instruction but kept here. They cover such topics as the senses, growth of the body, studies of memory, number forms, voice, children's drawings, degeneracy, sex, interest, adolescence, truancy, heredity, moral defects, emotions—such as fear, anger, love—puzzles, brain and nerves, automatisms, delinquency, writing, arithmetic, fatigue, health, English, French, German and other school curricula and organizations of many kinds, classifications in various departments, *e. g.*, of languages, diseases, biological species, races of men, etc., charts illustrating the history of philosophy, gesture, facial expression, educational buildings, relations between phyletic and ontogenetic, the development of the history of mankind, distribution and migration of animals, and many other topics.

II. CORRESPONDENCE DEPARTMENT OF THE CHILDREN'S INSTITUTE

By Theodate L. Smith, Ph. D.

Pending the completion of the new building, a large room on the first floor of the library (25 x 30 ft.) has been devoted to the work of the Institute. This room has been fitted up with shelving, having at present 416 ft., well filled with a collection of reports and literature bearing on child welfare, with one section assigned to educational topics. All books and bound periodicals relating to child study, to the collection of which the librarian, Dr. Louis N. Wilson, has given special attention for the last thirteen years, are provided for in the main rooms of the library and classified in the department of education. During the last year a large part of the time of one person has been given to the collection and classification of reports of societies and institutions in the United States and European countries relating to the welfare of children and adolescents. Among these are included as being of fundamental importance, all organizations for the aid and instruction of mothers. As no general list of such institutions exists, one of the difficulties encountered has been the finding out of how many and what organizations are at work and where they are situated. Some of the sources from which this information has been obtained are as follows: Mr. John Koren's special report on the "Benevolent Institutions of the United States," published in 1904 by the Census Bureau, includes orphanages, temporary and permanent homes for adults and children, day nurseries, hospitals, and dispensaries. Although only the general classification above given is attempted, this report has proved of great value not only for its universal lists, but it has been possible, by going through these selectively, to compile special lists which may be needed for purposes of research, *e. g.*, institutions for crippled or epileptic children, children's hospitals, foundling asylums, etc.

Most large cities publish directories of the local charities and philanthropies, some of which have branches or similar organizations in other towns and cities. Where federations exist, it has been possible to obtain from the secretaries the addresses of affiliated institutions. The Charity Organization Society of the city of New York publishes a directory which gives an

approximately complete list, not only of the Associated Charities of the United States, but a more limited one of those in foreign countries, and a list of American Consuls who have expressed their willingness to co-operate in philanthropic work. Organized charities everywhere have been most generous and helpful in furnishing local lists of societies and institutions relating to child welfare. In some cases these lists are printed but in many others they have been specially prepared for the Institute at a considerable expenditure of time and labor. For the educational section, a list of the schools of forestry in the United States, a valuable, unpublished bibliography as well as a generous collection of pamphlets has been furnished by the U. S. Forest Service. The U. S. Commissioner of Education, Dr. Brown, has furnished the Institute with an unpublished list of the public school classes for backward and defective children and a bibliography of published articles relating to such work. This has been of especial value for a doctor's thesis still in progress. A number of American consuls have also furnished data for this study, and also lists of foreign philanthropic institutions. Hull House publishes a directory of social settlements in the United States and foreign countries and, like the Associated Charities, the settlements have proved valuable sources for collecting data on child welfare work. The Charity Organization Society of London publishes an annual register and digest of charities from which addresses of English Child Welfare societies have been obtained. For many agencies, there are no lists of any kind accessible and in these cases addresses must be obtained singly from any and every source, the chances being that any institution will be able to furnish some information in regard to at least one or two others doing similar work. In some cases, foreign child study periodicals or individual students of child study have been helpful. Since September some 2,500 postals and over 2,000 letters have been sent out, of which the net result is a collection of between three and four thousand reports and pamphlets, representing over eighty types of organizations devoted either wholly or in part to child welfare. In order to render this material readily accessible for use it has been roughly classified under the following headings:

Defective Children

*Schools for the Blind.
" " " Deaf (public and private).
*Institutions for the Feeble-Minded (public and private).
Institutions for Speech Defects.
Psychological Clinics.

Delinquent Children

Big Brothers Movement.
*Institutions for Delinquent Boys.
* " " " Girls.
*Help for Girls who have gone wrong.

*Institutions marked thus are represented in Worcester and vicinity.

*Juvenile Courts.
Psychopathic Institute (Chicago).
*Probation Work.
*Truant Schools.

Dependent and Needy Children

*Associated Charities.
*Children's Aid Societies (placing out system).
*Day Nurseries.
Industrial Schools and Homes.
Infant Asylums.
*Orphanages.

Hygienic Agencies

Fresh Air Work.
*Milk Commissions and Depots.
*Public Baths and Gymnasiums.
*Societies for the Prevention of Tuberculosis.

Moral and Religious Training

Church Clubs and Guilds.
Institutional Churches.
International Committee on Moral Training.
*Missionary Work.
New England Watch and Ward Society.
Purity Associations.
Society for Ethical Culture.
Societies for Moral Prophylaxis.
*Sunday Schools.
Temperance Work.
*Y. M. C. A. (Junior Clubs).
*Y. W. C. A. " "

Protective Associations

Censory Boards for Moving Pictures, etc.
*Consumers' League.
Child Labor Committee.
Humane Societies.
Protective Associations for Girls.
Juvenile Protective Associations.
Societies for the Prevention of Crime.
Societies for the Prevention of Cruelty to Children.
Society for the Prevention of Vice (New York).

Recreation

*Boys' Camps.
*Boys' Clubs.
Boyville.
*Children's Libraries.
" Theatre.
Girls' Camps.
Girls' Clubs.
*Park Commissions.
Playground Associations.
Shut In Societies.
Story Tellers' League.
*Vacation Schools.

Child Welfare Movements connected with Schools

*Kindergartens.
*Medical Inspection in Schools.
Open Air Schools.
Parents' and Teachers' Associations.
*Public Education Associations.
School Improvement Associations.
School Nurses.
Teachers' Clubs.

Relief for Sick Children

*Children's Hospitals (Memorial Hospital, Worcester, has children's ward).
Diet Kitchens.
*Dispensaries.
*District Nurses.
*Free Dental Associations.
Fresh Air and Convalescent Homes.
Institutions for Crippled Children.
* " " Nervous and Epileptic Children.

General Welfare Associations

*Mothers' Congress and Clubs.
Children's Bureaus.
*Children's Institute (Clark University).
*Child Welfare Conferences.
Child Welfare Exhibit (New York).
*Child Welfare Survey (Worcester).
Civic Leagues.
Stamp Savings System, Penny Savings, etc.
Relief and Aid Societies.
*Women's Clubs.

The method temporarily adopted for rendering this somewhat heterogeneous mass of printed and written material available for immediate use is that of placing all material relating to a given subject in large envelopes of heavy paper (9½ by 11½

inches) plainly marked with the title by means of rubber stamps and arranged on the shelves in alphabetical order under the general headings given above. Gradually bibliographies of the books and periodical literature relating to these subjects are being built up. These will be kept in special cases apart from the regular library catalogue, and it is hoped will, in time, form one of the valuable assets of the library for social workers and those doing research work along lines of child welfare. On topics where the movement is comparatively new as, for instance, open air schools or schools for mothers, clippings and references even to mere paragraphs and notes on the actual or probable establishment of stations in new localities are preserved, and the hints thus obtained are followed up by correspondence. Special attention has been given to the collection of reports and literature relating to institutions represented in Worcester, with the view of co-operating with the Worcester Survey and furnishing comparative data, *e. g.*, on milk commissions and depots, playgrounds, prevention of tuberculosis, district nurses, boys' clubs, juvenile courts and probation systems, public school work with defective children, etc. The library also furnishes to students engaged in research assistance in finding sources of information and obtaining data. In some cases, students from out of town have visited the university for longer or shorter periods because of the opportunity to obtain information on phases of work with childhood and adolescence not accessible elsewhere, and frequent requests for bibliographies and suggestions for courses in child study come from former students whose appreciation of the resources of the Clark Library grows with their experience in teaching. The collection of child welfare reports has also been consulted by people interested in social and philanthropic work both from the city and neighboring towns.

Another phase of the work is the answering of letters asking for advice and information on almost every topic connected with child study. This is not a new development but the establishment of the Children's Institute has naturally, not only caused an increase in the usual type of letters but so many inquiries in regard to the Institute itself have been received that it became necessary to standardize a letter containing a statement of the main facts, to which answers to specific inquiries could be added as occasion demanded. These letters come not only from all parts of the United States but from European countries, and there are five foreign child study associations (in England, Japan, Poland, Italy, Hungary), four of which now publish journals, who state that the original inspiration came directly from Clark University. The varied character of this correspondence is perhaps best shown by the following list

of subjects taken directly from the letter files. A Southern association of college women asks for references and modes of obtaining information on the state care of backward and mentally defective children; a clergyman wishes to know how and where he may obtain information on the different phases of the boy problem; a member of the Polish Child Study Association writes for references to French, German, Italian and English articles on the imagination of children, studies having a pedagogical application being especially desired; other correspondents ask for references on children's sense of humor and on moral development; the secretary of a federation of boys' clubs requests a list of books which will be helpful to workers in boys' clubs. As this list was for the use of a large number of clubs, in sending it a request was made that at the end of the year it might be returned to the library with annotations as to the practical value of the different references. By such co-operative methods it would seem that a connection might be made between academic and social work that would be of mutual advantage. Inquiries in regard to boarding schools adapted to individual cases are constantly received and, so far as possible, an effort is made to obtain information as to the character and standing of different schools in addition to that contained in the usual prospectus. Many letters come from those who wish to start child study or mothers' clubs asking for advice and direction. A printed list of some of the best general books on child study, compiled by Dr. Wilson, and an index of the more than two hundred child studies published at the University during the last fifteen years has greatly facilitated work in this line, as a sufficient number of copies of them have been furnished as library publications or reprints from the *Pedagogical Seminary* to allow of copies marked in accordance with individual needs being sent to those who desired such references.

As there is little general knowledge of the scope and character of the different phases of philanthropic and charitable activities, and even social workers who know their own fields thoroughly may have little opportunity to become acquainted with the work of other organizations, it seemed that it might be useful to compile a series of brief accounts of the more important child welfare agencies represented in the collection of reports, such accounts to include date and place of organization, date of incorporation, specific purpose, number of children benefited, sources of income and amount annually expended. It soon appeared, however, that much of this data was unattainable except by special and extended research. In a few cases, well established societies have presented the Institute with a complete set of their reports, *e. g.*, the Massachusetts Society for the Prevention of Cruelty to Children and the Worcester

Children's Friend Society, but many organizations have, during the earlier years of their existence, either published no report or, at most, a brief financial statement, and even if complete sets of reports were obtainable they would often be of no especial value for research purposes, the main object of the report being to interest the public and raise funds, and not to furnish data for research. Reports issued by organized charities and institutions which are well up in methods of social work do furnish such data on many points and would, doubtless, be willing to include even more items of sociological and psychological value if these were suggested. In fact letters have been received from the heads of several institutions offering to co-operate with the Institute in just this way and also to put unpublished data at the disposal of any investigator wishing to use it. But there are also reports which may be read from cover to cover for the purpose of classification and the reader still be left in uncertainty as to whether the institution in question is intended for dependent or delinquent children, boys or girls, or both, and under what conditions children are eligible. It has also happened more than once that application has been made to the library for information as to the mode of procedure necessary for placing a child in an institution, although the applicant was already in possession of the annual report of the institution. Probably all these points have been stated in earlier reports and, being familiar to the management, repetition may seem unnecessary, but a preliminary paragraph containing such desirable information in clear and concise form unquestionably adds to the value of a report. A few institutions which do excellent work print no reports or do so only at irregular intervals, some, because of lack of funds, others, perhaps, because they attach no particular value to reports. Some of these, however, have been very kind in furnishing written data and requests for information not contained in the printed reports have often been very fully answered. The annual reports of the Conference of Charities and Corrections, covering a period of thirty-six years, have proved a mine of information and furnished data in regard to the growth and development of philanthropic work, not otherwise attainable. With the aid of these, the collection of reports of institutions, and information obtained by correspondence, brief sketches of a score or more of child welfare organizations have been compiled and the collection of data for others is in progress. In time, these may form the basis for a work on social psychology.

There is a possibility, as yet untouched, for the library to make a much needed connection between academic research and practical philanthropy and education. The statement is frequently made by social workers and teachers that although

they know that in the researches on child and adolescent psychology there is much which would be of great value to them in their work, it is not in accessible form. Of the twenty and more child study periodicals, eleven are in German, five in English, four in French, one in Japanese and the others in Slavic languages. One journal has a summary in both French and German so that its contents are accessible to university students. Moreover, many of the best studies in English are in too technical and bulky a form to be useful to those whose chief energy is given to practical work. Library bulletins containing the gist of these studies and *résumés* of the most valuable of the French and German studies, in a form inexpensive enough to render them accessible to the army of teachers and workers with children, who cannot afford expensive periodicals, would meet a definite need. Such bulletins would of necessity require the co-operation of all members of the University engaged in the different problems of child study. Systematic co-operation with foreign child study and child welfare societies might be arranged by means of these bulletins. There is a long file of requests from foreign correspondents for information in regard to the Children's Institute, and a regular exchange of publications is frequently suggested. The foundation for such international co-operative work has already been laid through correspondence and the *Institut Solvey* has already proposed to establish through authoritative representatives of the various sciences in each country, a bibliographical exchange of both published and unpublished researches, that duplication of work may be avoided. In such a scheme of international co-operation, the Children's Institute should certainly do its part.

III. SCHOOL HYGIENE IN THE CHILDREN'S INSTITUTE

By Wm. H. Burnham, Ph. D.

During the past year no special work in school hygiene in connection with the new department of the Children's Institute has been done; but almost from the establishment of the University Department of Education, twenty years ago, a large place has been given to this subject and the work done has anticipated the requirements of a department especially devoted to child welfare. It is hoped that the formal connection with the Institute and the new opportunity and added facilities of the new department may give increased emphasis and importance to the subject.

During recent years we have come to see the need of caring for the health of school children in a more definite and concrete manner than was formerly possible. A new science of school hygiene has developed with a solid basis of scientific fact and a new profession is arising—that of the health supervisor in the school; and the emphasis on the need of hygiene has been tremendously increased. When we find that more than 90% of the mortality from the ordinary contagious diseases of childhood occurs before the age of ten, and that the relative mortality of these diseases is much greater at this age, that furthermore defects of the sense organs, adenoids, and probably the beginnings of other defects occur here, it appears that the aim of education in these early years should be primarily to safeguard the health of children and foster normal development. The modern studies of contagious disease show also the great saving of time and the money of the taxpayer as well as of health which result from the scientific method of caring for such diseases.

Certain facts established by modern neurology also have increased the emphasis on school hygiene. The studies of the conditions of efficient brain activity, of the effects of fatigue, and the like, show the importance of a period of study arranged from the point of view of scientific hygiene and of optimum conditions for school work.

In recent years the field of school hygiene has been enormously widened and it is now seen that every subject of instruction and every pedagogical principle and method has its hygienic aspect which must not be ignored. This part of the

subject, now called the hygiene of instruction, aims not merely at the avoidance of overwork but at the development of such habits of mental activity as shall be prophylactic against nervous breakdown. This new field especially concerns teachers and to it they can especially contribute.

While in Clark University much attention has been given to the general field of school hygiene, special attention has been devoted to the personal hygiene of the school child and to the hygiene of instruction.

A large part of the papers published by members of the University in this field have been devoted to subjects connected with the hygiene of instruction as will be seen from the following partial list:

BOBBITT, J. F. Growth of Philippine Children. *Ped. Sem.*, June, 1909, Vol. XVI, pp. 3-34.

BURK, FREDERIC L. From Fundamental to Accessory in the Development of the Nervous System and of Movements. *Ped. Sem.*, October, 1898, Vol. VI, No. 1, pp. 5-64.

—— ——. Growth of Children in Height and Weight. *Am. Jour. of Psych.*, April, 1898, Vol. IX, pp. 253-326.

BURNHAM, WM. H. Outlines of School Hygiene. *Ped. Sem.*, June, 1892, Vol. II, pp. 9-71.

—— ——. Motor Ability in Children: Development and Training. Proc. Am. Inst. of Instruction. Boston, 1894, pp. 127-140.

—— ——. Impurities in the Air of Schoolrooms. North Western Monthly, July, 1897, Vol. VIII, pp. 75-80.

—— ——. Bibliography of School Hygiene. Proc. N. E. A., 1898, pp. 505-523.

—— ——. School Hygiene. Johnson's Universal Cyclopædia. New edition, 1899, Vol. X.

—— ——. School Diseases. *Loc. cit.*

—— ——. Mental Hygiene. *Loc. cit.*

—— ——. Health Inspection in the Schools. *Ped. Sem.*, April, 1900, Vol. VII, pp. 70-94.

—— ——. The Ideal Schoolhouse. The World's Work, June, 1901, pp. 866-871.

—— ——. Fatigue. N. Y. Teachers' Monographs, December, 1902, Vol. IV, No. 4, pp. 20-28.

—— ——. The Hygiene of the Kindergarten Child. Proc. of the Depart. of Kindergarten and Elementary Educ. N. E. A., June-July, 1904, pp. 416-422. Also Kindergarten Review, October, 1904. Vol. XIV, pp. 65-71.

—— ——. A Contribution to the Hygiene of Teaching. First Congress of School Hygiene, Nuremburg, April, 1904, IV, pp. 483-487.

—— ——. The Hygiene of Home Study. *Ped. Sem.*, June, 1905, Vol. XII, pp. 213-230.

—— ——. Health Inspection in the Public Schools. Worcester Magazine, June, 1905, Vol. VIII, No. 6, pp. 120-124.

—— ——. Education from the Genetic Point of View. Proc. Nat. Educ. Assoc., Asbury Park, N. J., 1905, pp. 727-732.

—— ——. Hygiène scolaire aux États-Unis. 1er Congrès International d'Education et de Protection de l'enfance dans la famille. Liege, September, 1905, Section 1, pp. 94-104.

—— ——. Report of the Committee on School Hygiene of the Worcester Public Educ. Assoc., *Ped. Sem.*, June, 1906, pp. 230-244.

BURNHAM, WM. H. The Hygiene of the Teeth. *Ped. Sem.*, September, 1906, pp. 293-306.
—— ——. School Work in its relation to (a) The duration of the lessons. (b) The sequence to the subjects. (c) The season of the year. Sec. Int. Congress on School Hygiene. London, 1907, Vol. I, pp. 33-37.
—— ——. The Hygiene of Drawing. *Ped. Sem.*, September, 1907, Vol. XIV, pp. 289-304.
—— ——. The Hygiene of the Nose. *Ped. Sem.*, June, 1908, Vol. XV, pp. 155-169.
—— ——. The Problem of Fatigue. *Am. Jour. of Psychology*, July, 1908, Vol. XIX, No. 3, pp. 385-399.
—— ——. One Session a Day, or Two, in the Public Schools? Hygiene and Physical Education, March, 1909, pp. 1-11.
—— ——. Cleanliness in the School Room. Good Health, August, 1909, pp. 596-600.
—— ——. The Hygiene of the Kindergarten. Kindergarten Review, June, 1909, Vol. XIX, No. 10, pp. 590-599.
—— ——. The Need of More Attention to Health in the Public Schools. Proc. 46th Annual Convocation of the Univ. of the State of New York. No. 443, March 15, 1909, pp. 23-25.
—— ——. Food for Children and School Lunches. The Delineator, March, 1910, Vol. LXXV, No. 3, p. 225.
—— ——. The Hygiene of Physical Training. Reprinted from Phys. Educ. Review, February, 1910, 40 p.
CHRISMAN, OSCAR. The Hearing of Children. *Ped. Sem.*, December, 1893, Vol. II, pp. 397-441.
CONRADI, EDWARD. Psychology and Pathology of Speech Development in the Child. *Ped. Sem.*, September, 1904, Vol. XI, No. 3, pp. 328-380.
CROSWELL, T. R. Amusements of Worcester School Children. *Ped. Sem.*, September, 1899, Vol. VI, No. 3, pp. 314-371.
CURTIS, ELNORA W. Out-Door Schools. *Ped. Sem.*, June, 1909, Vol. XVI, pp. 169-194.
DRESSLAR, F. B. A Sketch of Old Schoolhouses. *Ped. Sem.*, June, 1892, Vol. II, No. 1, pp. 115-148.
—— ——. Fatigue. *Ped. Sem.*, June, 1892, Vol. II, No. 1, pp. 102-106.
EBY, FREDERIC. The Reconstruction of the Kindergarten. *Ped. Sem.*, July, 1900, Vol. VII, No. 2, pp. 229-286.
HANCOCK, JOHN A. A Preliminary Study of Motor Ability. *Ped. Sem.*, October, 1894, Vol. III, pp. 9-29.
JOHNSON, G. E. Education by Plays and Games. *Ped. Sem.*, October, 1894, Vol. III, pp. 97-133.
MEYERHARDT, M. W. Economical Learning. *Ped. Sem.*, June, 1906, Vol. XIII, No. 2, pp. 145-184.
SEARS, CHARLES H. Home and School Punishments. *Ped. Sem.*, March, 1899, Vol. VI, No. 2, pp. 159-187.

For several years the University instructor in school hygiene has served as Chairman of the Committee on School Hygiene of the Worcester Public Education Association. The yearly reports of this Committee have concerned such subjects as the following: Physical Education; Medical Inspection; Defects and Contagious Diseases; Tuberculosis; Cleanliness; Recesses; Dental Inspection; School Sanitation.

In connection with the work of the Worcester Child Welfare Conference the instructor of this department has served on the

Committee on School Hygiene. One or two students also have made investigations in connection with the Social Survey under the auspices of this Society. The work of one of these students, who investigated especially the conditions of the milk supply, is practically complete.

The emphasis placed on school hygiene was again illustrated at the recent scientific meetings, on the occasion of the twentieth anniversary of Clark University. At these meetings much attention was given to this subject and lectures largely concerned with problems in the hygiene of instruction and mental hygiene were given.

It is probably the first time in a university celebration that school hygiene has been given a special place as a scientific subject, and perhaps even to some of the scientists present it was a revelation to find that the problems of schoolroom sanitation and schoolroom instruction could be treated in a thoroughly scientific manner. The lectures in this subject were given by Dr. Leo Burgerstein, of the University of Vienna, co-author of Burgerstein and Netolitzsky's *Handbuch der Schulhygiene*, and probably the leading authority of the world in this field. Dr. Burgerstein's first lecture dealt largely with the ventilation and lighting of schoolrooms and problems of posture and penmanship, the second with co-education in the light of European experience, the third with some aspects of the relations of body and mind. Of special significance, perhaps, was the lecture on co-education and hygiene. The lecturer résuméd and discussed the results of modern scientific studies which show physical differences between boys and girls at the age of puberty.

Books and Apparatus. A large collection of books and periodicals both foreign and English are accessible in the University library. A large number of charts illustrating the results of scientific investigation in school hygiene have been prepared. The nucleus of a laboratory and museum including apparatus for testing CO_2, hygrometers, devices for illustrating norms for school furniture, adjustable seats and desks, charts for eye tests, and other illustrative material — has been already collected and more is to be added.

Rooms have been provided for this sub-department in the new building. This will make the books and periodicals on school hygiene in the University library easily accessible, and also illustrative material and apparatus in school hygiene possessed or already ordered by the department. Among the latter are the following:

Pettersson-Palmqvist's Quantitative Air Tester. Kohlensäureapparat.

Hohmann's Sling Psychrometer.

The Tycos Hygrodeik.

Pleier's Raumwinkelmesser. Karlsbad, Austria.

Walter's working drawings for different sizes of school desks. Vorarlberg, Österreich.

Seggel: Sehprobentafeln zur Prüfung des Lichtsinns. München. Litt. artist. Anst. von Theodor Riedel und Fr. Basserman.

Sehproben und Sehprüfung. Optotypi Pflüger. 2. Auflage.

A school desk and seat for demonstrating the measurements of the Vienna School Desk Expert Commission.

Many pieces of apparatus for making tests of school children are also available in the laboratories of other departments, such as apparatus for making the standard measurements, dynamometers, Callie's audiometer, test cards and the like.

Besides periodicals upon general hygiene and biology the University library contains the following magazines devoted entirely or in part to school hygiene:

American Physical Education Review. J. H. McCurdy, M. D., editor, Springfield, Mass., 1896-

Das Schulhaus. Karl Vanselow, Berlin, 1899-

Das Schulzimmer. H. Th. Matth. Meyer, Charlottenburg, 1903-

Die Experimentelle Pädagogik. W. A. Lay und E. Meumann, Leipzig, 1905-1907, Vol. 1-4. Continued as Zeitschrift für Experimentelle Pädagogik. 1907-

Die Gesundheitswarte der Schule; Monatsschrift für Stadt- und Landlehrer. Redigiert von Dr. Alfred Baur, Leipzig, 1903-

Gesunde Jugend. Herausg. von Dr. H. Selter und Prof. K. Roller, Leipzig und Berlin. Verlag von B. G. Teubner, 1900-

Hygiene and Physical Education. Wm. W. Hastings, editor, Springfield, Mass., March, 1909-Jan. 1910.

L'hygiene scolaire. Masson et Cie, Éditeurs, Paris, 1903-

Internationales Archiv für Schulhygiene. Edited by Dr. A. Mathieu and Sir Lauder Brunton. Herausg. von Dr. A. Johannessen und Dr. H. Griesbach. Leipzig, 1905-

Jahrbuch für der Schweizerischen Gesellschaft für Schulgesundheitspflege. Kommissionsverlag von Zürcher und Furrer. Redaktion: Dr. E. Zollinger, Zürich, 1900-

Jahrbuch für Volks- und Jugendspiele. herausg. von Hofrat Prof. H. Randt. Leipzig und Berlin, 1894.

Reports of the Education Committee of the London County Council. Submitting the report of the Medical Officer (Education). Spring Gardens, S. W., 1904-

Sammlung von Abhandlungen aus dem Gebiete der Pädagogischen Psychologie und Physiologie. herausg. von Th. Ziegler und Th. Ziehen. Berlin, 1897-

School Hygiene; issued by the American School Hygiene Association, Boston, 1908-9. Continued in Hygiene and Physical Education.

School Hygiene. School Hygiene Publication Co., London, 1910-

The Journal of Educational Psychology. J. Carleton Bell, Managing Editor, Baltimore, 1910-

The Psychological Clinic. Lightner Witmer, Ph. D., Editor. Philadelphia, 1908-

Vierteljahrsschrift für körperliche Erziehung. herausg. von Dr. Viktor Pimmer. Wein. 1905-1909. Continued under the name of Körperliche Erziehung. Zeitschrift für reales Leben.

Werde Gesund. Heraufg. von Dr. Georg Liebe. Erlangen, 1906-7. United with Der Arzt als Erzieher. Heraush. von Otto Gmelin and Dr. Thedor Leffing. München.

Zeitschrift für Hygiene. herausg. von R. Koch und C. Flügge. Leipzig, 1890-

Zeitschrift für Kinderforschung mit besonderer Berücksichtigung der pädagogischen Pathologie. Hermann Beyer and Söhne. Langensalza. 1907- Vols. I-II (1896-1906), under the title Die Kinderfehler.

Zeitschrift für pädagogische Psychologie Pathologie und Hygiene. herausg. von M. Brahn, G. Deuchler, O. Scheibner. verlag von Quelle & Meyer. Leipzig, 1889-

Zeitschrift für Schulgesundheitspflege. Redigiert von Dr. Stephani in Manheim. Verlag. von Leopold Voss. Hamburg, 1888.

Courses. The following University courses in School Hygiene have been given. At least one course one hour a week for the whole year has been given each year to a good number of students almost from the opening of the University.

A. The Hygiene of the School Child. This course is supplementary to the course on the hygiene of Instruction given in 1904-05. Some of the more important chapters in modern school hygiene will be considered including such topics as :— The conditions that determine growth and development. The general principles of somatic and mental hygiene. The hygiene of the senses. Modern studies of defects of sight and hearing. School diseases. The hygiene of the voice, the mouth, the teeth, the nose. Mental diseases and faults of children. Neuroses of development. Tests of ability to work and of physical condition. Medical inspection. The hygiene of discipline. The development of healthful mental activity. Hygiene of memory, of attention, and of feeling. The hygienic aspect of some psychological studies.

B. School Sanitation and School Diseases. Modern studies of the sanitary condition of schoolhouses and school diseases. The fundamental principles of hygiene in regard to building, playgrounds, heating and ventilation, lighting, school furniture, etc. Studies of school diseases; medical inspection and its results. The aim of education from the point of view of hygiene. Present problems, etc.

C. The Hygiene of Instruction. Mental hygiene and the hygiene of instruction. The laws of nervous activity in relation to problems of instruction. Fatigue. The period of study. The hygiene of the kindergarten. The hygiene of spelling, reading, writing, arithmetic, manual training, physical training, etc. The hygienic aspects of grading, of examinations, of discipline, of punishment, etc.

It is planned to give this last course, Course C, in the academic year 1910-11.

IV. WORK WITH THE BACKWARD AND SUB-NORMAL IN THE CHILDREN'S INSTITUTE.

By Harry W. Chase.

The work of the writer in connection with the sub-normal department of the Children's Institute was begun only the first of January and as a result much is still in a formative stage.

Visits to other Institutions. In order to gain some knowledge of what was being undertaken by other investigators in the same line, a two weeks trip was first made to some of the institutions and clinics which it seemed were in a position to furnish the most in the way of orientation for the new work. A few points may be of interest in this connection. Some days were spent at the New Jersey State Training School for the Feeble-minded at Vineland. Valuable work is being done here by Dr. Goddard in the research laboratory in connection with the institution. The problem is being attacked on its social side by studies in the heredity of the deficient children of the institution, with the assistance of two field workers. Much positive evidence is being gathered to show the vast part played by heredity in the production of defectives, and the suggestion is even ventured that the transmission of such defects may follow the Mendelian laws.

On the psychological side, the attempt is being made to work out series of tests, sensory and motor, which will accurately classify deficient children with regard to the degree of defect present. On the motor side certain correlations seem to be established by this work which show that the more serious the defect the less the lung capacity and power of grip as compared with the height and weight of the child. The time of replacing the blocks in the form board also seems to correlate pretty well with the degree of defect. The Binet tests, which attempt to give norms for each age, are also being tried, and Dr. Goddard is inclined to think that they are fairly accurate in their results. Various other motor and sensory tests are being tried out, but as yet are not standardized.

The clinic of Dr. Witmer at the University of Pennsylvania was seen. This attacks a little different phase of the problem. Here the attempt is made to apply psychology to the diagnosis of defects and the separation of the sub-normal from the backward child. The children are brought to the clinic for a mental examination, and, if there is reason to suspect physical defects,

are given a thorough examination by specialists and reports sent back to the clinic. If necessary, operations, glasses, etc., are advised, and the attempt is made to follow up the children and see if progress results under improved conditions. The work has been going on for a number of years, and is well correlated. Little attempt has here been made to work out tests which will serve as standards, each case being treated rather as an individual matter to be examined into on its own merits.

The work of Dr. Healy in connection with the juvenile court of Chicago, which the writer saw, touches still another aspect of the problem. Here Dr. Healy, himself a neurologist, with the assistance of Miss Fernald, a trained psychologist, examines the youthful delinquents of the city. The presumption is that a child who is brought for the second time before the court after being once warned is on *a priori* grounds open to the suspicion of defect, and consequently all such second offenders are turned over for examination, physical and mental. Dr. Healy has elaborated a very inclusive series of blanks which include the social and personal aspects of each case, the most complete which we have seen. Here the Binet tests, those of Thorndike and Miss Norsworthy and others are being used, and the attempt is at present being made to develop some sort of simple educability tests which will be independent of language.

Psychology is also being applied to the sorting out of defectives by the Child-Study Bureau of the Chicago public schools, under the direction of Dr. MacMillan. Children are brought to the office and are assigned on the basis of an examination to special classes or institutions, or medical treatment is prescribed. Valuable reports have been issued and standard tests described.

The Illinois state institution at Lincoln was also visited. Here Dr. Huey is beginning work as psychologist of the institution, with a field which gives promise of rich results. The work here has been going on for so short a time that new tests have as yet not been devised.

In New York the institution at Randall's Island was visited. Here practically nothing of a psychological nature is attempted. Miss Norsworthy, who has devised well-known tests, was seen, as were several officials connected with the special classes of the city. As it was vacation time, the special classes must be reserved for a future visit. Among the other institutions visited were the private ones of Haddonfield, N. J., under the direction of Miss Bancroft, and that of Dr. Groszmann, at Plainfield, N. J. These proved suggestive in showing what can be done by education for defectives.

Dr. Whipple, at Cornell, kindly showed the apparatus and

tests which he has standardized, many of which are new and valuable, and have the advantage of being made under standard conditions, so that they can be easily reproduced.

BEGINNINGS OF WORK HERE. News of the fact that a department of this sort was to be established had already been published, and a score of letters had already come in from parents who desired to bring children here for examination and recommendation. Some, in their anxiety for the examination, had written two or three times to know when they could come to the University. To all these the announcement was sent out that the department was now in readiness for work, and replies began to come in making appointments.

These letters were not only from people in this state, but from the other New England states and even from greater distances.

It had already been decided that examination of these cases ought to be conducted both by a physician and by a psychologist. This would have the advantage of bringing to bear two different points of view on each case, and points would suggest themselves from both sides in conference which might not stand out if both functions were united in the same individual, whether he were a psychologist with a medical training, or a physician with a psychological background. The department has been exceedingly fortunate in securing for the medical examination the services of D. F. O'Connor, M. D., of this city, a man whose Vienna training and years of practise in this city and at the State Industrial School at Lancaster, have fitted him especially for this sort of work. His knowledge of diseases of the eye, ear, nose and throat is especially valuable for the work, for so many defects of this sort are found in the class of children who come for examination. His services have been invaluable, and he has given freely of his time, at the cost of some personal inconvenience to himself.

Board and Lodging. Dr. Bemis of this city also kindly secured rooms near the University where parents and children might stay while in the city if they so desired. On account of the difficulty of finding board and lodging near the University, this has been a great convenience, and most of the parents coming from out of town have availed themselves of the opportunity.

Material Equipment. Two connecting rooms on the top floor of the main building were placed at the disposal of the department. The inner is used for the examinations and tests, the outer for an anteroom. There is also across the hall the comfortably furnished women's rest room, which is used by the department in case of need as a supplementary waiting-room. The test room opens directly into the psychological

laboratory, making it easy and convenient to set up desired apparatus without delay. Apparatus for the special needs of the department is being bought as seems necessary, but the effort is made to duplicate as little as possible apparatus already in possession of the other departments, which can be loaned for our purposes. Thanks to the courtesy of the other departments, and especially to the department of experimental pedagogy, considerable apparatus has in this way been placed at our disposal. We have at present apparatus for the more common physical measurements, for the testing of vision, the McCallie audiometer for the testing of hearing, a set of the simple apparatus necessary for the Binet and de Sanctis tests, a form board of the type devised by Dr. Goddard, and sufficient other apparatus either set up or at our disposal, thanks to the courtesy of the psychological department, to enable us to carry out practically any test that we may desire. In some cases it seems desirable that a more simple form of apparatus than the one ordinarily used in the laboratory be worked out, which will be adapted better to our needs. A simple form of ergograph is especially desirable, and the attempt is at present being made to devise one. Mention should also be made of the apparatus for the testing of blood-pressure, a branch of the work which is under the supervision of Dr. Osborne, who has had considerable experience in this line.

Anamnesia and Question Blanks. But the question of material eqipment is of course only one side of the matter. We were confronted at the beginning of the work by two questions especially. The first was as to the best method of getting from physicians, parents and others every scrap of information possible which would throw light both on the personal history of the child and on those points in the family history which might have any possible bearing on the case. It was decided that the best way to accomplish this would be, first, to send a blank to the family physician containing questions to be answered by him and the blank returned by him without passing through the hands of the family; and second, to devise a series of blanks to be answered in the presence of the examiners by the parent or guardian of the child. It is always found that parents overestimate the capacities of such children. Over and over again in our letters the phrase is used, "He is such a thoroughly normal child in many respects."

Consequently the aim was to make the questions as specific as possible, and at the same time numerous enough to cover all points that might throw light on the question. It was attempted at the start to make out the blanks on the principle of inclusion, and later to drop out such material as it was

found was not necessary. The blanks in this formative stage have not been printed. They are now being worked over into some sort of final shape which will admit of their being printed, unnecessary questions cut out and some others inserted. The blanks themselves consequently cannot be given in this report, but a general description of them may be. We are indebted here to the collection of blanks from different institutions for defectives made by Dr. Smith, to the very inclusive blanks of Dr. Healy, to institutions visited, and to the literature of the subject.

The blanks designed for the family physician cover first, the family history, beginning with the grandparents, diseases of which they died, age of death, blood relationship between them, the question of any history of the use of drugs, alcohol, imbecility, neurotic conditions, specific or other diseases that might contribute to defective descendants. Then the history of the parents is taken up, occupation of each, age at birth of the child, the history of each with regard to disease, alcohol and drug use, the number and physical and mental condition of the other children, the condition of the mother during pregnancy, are inquired into. Regarding the child the question of birth conditions is gone into; was birth at full term, natural or with instruments, the condition of the child immediately after birth, the nutrition of the child, the age of walking and talking, any peculiar conditions during infancy, the occurrence of spasms, etc. The question is asked as to the diseases which the child has had, with his condition on recovery from these; whether epilepsy or hysteria, paralysis, have been manifest, and, if sub-normal, the age at which peculiarity manifested itself, with a history of the measures employed for relief, with their success.

It is the intention of the examiners that the physician should be paid a *fee* by the parents for filling out the blank. Unfortunately in the majority of cases which have so far been seen, it has been impossible to get this blank filled out, in most cases for the reason that the family has had no one physician for a long enough period to enable him to give sufficient information to be of value. It seems, however, very desirable that the blank should be used where possible.

There are two types of blanks used by the examiners at the clinic, and to be answered by the parents or guardians of the child. The first deals with the case from the medical side, and considers family and personal history as noted above, with more details of the history of the child, the diseases which he has had, injuries which he has sustained, conditions of dentition. The present condition of the child is then examined from the medical side. The blank for use here includes an ex-

amination of hearing, vision, the condition of the throat, glands, tonsils, adenoids, the presence of physical stigmata, general nutrition, reflexes, and other conditions which may be significant.

Dr. O'Connor summarizes this side of the work as follows:

"The physical examination of backward children often, if not always, may determine a definite or contributory cause for the retarded condition of the child and, therefore, suggest a remedy when applicable.

"Hereditary influence may manifest itself when a parent or the relatives of parents have been epileptics, alcoholics, neurotics, etc.

"A family history of syphilis or tuberculosis is also suggestive.

"The mother's condition, mental and physical, during gestation and at the birth of the child, the character of labor, use of instruments, accidents and injuries at this time are important data.

"The diseases of childhood, as for example: diphtheria, scarlet fever, whooping cough, and the more important meningitis (pneumonia also on account of a possible doubt in diagnosis from meningitis or as a complication) and a history of the after effects, mental and physical, may throw some light on the case.

"Examination of the eyes, ears, nose and throat, as well as inspection of manifest bodily defects often indicates a contributory cause."

The second type of blank deals with the mental side of the case. In this questions are asked as to the temperament of the child, whether nervous, apathetic, moody, obedient, easily led, truthful, etc. The attempt is made to ascertain the relations of the child to his parents, to other children of the same and younger age, to the opposite sex, his chief interests, methods of spending his leisure time, and the general environment of the child. If the child has been at school his educational history is gone into; the time of starting school, his progress, the character of school attended, his attitude toward his studies, teachers and playmates. If he has left school the reasons for this are gone into. It is regarded by both examiners as a very important side of the work that both personal and family history should be carefully gone over, and for this the co-operation of the parents is of course necessary. In most of the cases seen so far, the parents have come prepared to deal frankly with the examiners.

The second question confronting us was as to the *nature of the psychological tests* which should be used for the mental examination of the children.

To one who comes from normal psychology into this work, the first impression is that, notwithstanding the fact that able investigators are working in this field, there is still great confusion and great lack of norms. Tests are being used on subnormal children, and used with fairly accurate results by those with some background of experience in the field, but many of these same tests have never been tried out on normal

children. The tests which are most in use, those of Binet, were worked out on the children of two schools in Paris, but no systematic attempt has been made in this country to see how children grade up by their use. They are being taken up by teachers for defectives, and on that account the need for reliable norms seems all the more pressing.

The tests of Thorndike and Miss Norsworthy are in part open to the same objection, and a great many of them we find too complex for the majority of the children who come to us. Those devised by Professor Whipple have the advantage of being standardized better, but there is the disadvantage that the work has been done on older students, so that many of them are not applicable to our needs. Not to continue at length, the same lack of norms is everywhere apparent. We are thus in the peculiar position of attempting to grade sub-normal children by tests to which it is not exactly known how normal children react. So far as the merely practical side of the work goes, this objection is not serious enough to insurmountably handicap us, but from the scientific point of view it is a serious obstacle. The establishment of norms for the children of this vicinity would be such a valuable contribution that I would strongly recommend that investigations along this line be undertaken as soon as possible, perhaps in connection with one or several masters' theses, under the close direction either of the department of experimental pedagogy or of the department of sub-normal children.

In selecting tests, it seemed again best to proceed here by including all that seemed in any way workable, and dropping those that were found not to be serviceable. Accordingly, practically all the tests seen at the different institutions visited, with a few exceptions which did not seem suited to our purpose, have been utilized. These include the Binet tests of both series, the first, a series of thirty tests of increasing difficulty, mostly of a simple nature, which can be carried out without the use of much apparatus; and the second series which attempts to give a series of tests for children from the ages of five to thirteen, by which the mental age of the child may be determined. The ground of the de Sanctis tests is for the most part covered by these and other tests, but they have been used as seems advisable. Those of Professor Thorndike and Miss Norsworthy, as already stated, are rather complicated for our purposes, but in particular their memory tests by lists of related and unrelated words, which the child is asked to repeat after one reading, and the association tests, which consist of asking the child to give the opposites of one list of words, the words of which the words in a second are a part, words which are a part of words contained in a third list, and a list

of adjectives for which the child is to give associated nouns, are valuable for use with the older children. The literature on tests of intelligence was gone through so far as possible, and those tests which seemed applicable were chosen for trial. Here the trouble was that many of those given were too difficult for our purposes. This part of the work is of course far from being complete, and new tests are constantly being added.

The tests in this field arrange themselves naturally under two heads; first, those of motor co-ordination. Here many of these commonly in use are utilized, the ability to perform movements requiring co-ordination of the larger muscles is tested by having the child stand, walk, stand on one foot, with eyes open and closed, hop, stoop, etc. For the muscles of hands are used the tests of tying knots, stringing beads, picking up small objects, buttoning and unbuttoning clothes, spreading fingers. The control of the tongue, the vocal muscles and those of the face is also investigated.

The testing of the special senses falls in the case of vision and audition under the medical side of the work. A color test is, however, added. For the testing of the dermal sensibility the æsthesiometer is used. Here the main object of the test, the establishment of a threshold of discriminability, is many times impossible, but the interesting result, already mentioned by Binet, does stand out, that many deficient children, when the points are placed in irregular order at distances greater and less than the limen, answer in a sort of rhythm, that they fed one point, then two, then one, and so on in alternation. The other special senses have up to the present time been tested only roughly.

Tests of perception include, in the visual field, the perception of form, color, size and distance, auditory perception of tone (a test which has been little used owing to practical difficulties), and the tactual perception of familiar objects. Tests of memory involve immediate memory for words, sentences and numbers, the memory of selections read by the child and read to him, and the memory for pictures and familiar objects shown. Tests of memory for a longer time have been necessarily based on the memory of events which have occurred in previous sessions at the clinic. Attention tests used include, for the duration of attention, the rough test of tapping in unison with the metronome. For the attention-span, the number of forms or colors seen with one short exposure is used. The uniformity of attention is tested by simple reaction times, which show, in the case of the children tested, a great mean variation, and by the variations in the time and accuracy of counting groups of 100 letters or marking out a definite number of letters. An

attention test now to be added is that of the power of voluntary attention and effort, measured by the amount of increase of the maximal rate of tapping over the normal rate, as devised by Dr. Kuhlmann of this University. Tests of suggestibility include the asking of suggestive questions as to pictures seen and objects shown, in the manner of the German investigators. This side of the work is badly in need of further standardization. For tests of association, besides those already mentioned above, a series of words is used on all children of a sufficient grade of intelligence, to which reaction is made by the first associated word, the time of association and the word being noted. Several lists have been tried, but none has so far been found which is wholly satisfactory, though data have been obtained which will make the compiling of a more suitable list possible in the near future. This is, so far as I know, in its systematic use, a feature peculiar to the work here, and seems to be proving important for the information which it gives as to the nature of the mental processes of the child, when interpreted as to the formal nature of the reactions, their time, and their content. It is also suggestive as a starting point for a sort of psychoanalysis which shows up the child's interests and tendencies.

Other tests include such things as the ability to deal with mathematics, with questions of general information, with simple puzzles, with the interpretation of simple fables and the like, and the answering of questions which involve the analysis of more or less complex situations.

These may serve to give some idea as to the general nature of the tests used. In all over a hundred have been collected, and more are being constantly added, while some which seem ill-fitted for the work in hand are being weeded out.

Actual work in the department was begun the last of January. In all in the three months ending with the first of April, the examiners have seen twenty-one cases, some of which are still under observation. These are of both sexes in almost equal numbers, and range from the ages of five to seventeen, the greater number being children from eight to twelve years of age. These were at first mostly brought from outside the city, but lately most of our cases have been of people in or near the city, who have kept the child at home and brought him back and forth for the examination. In the cases with which we have finished, recommendations have been made as to hygiene, exercise, and mental regime to be followed, and, where it seemed advisable, recommendation has been made that the child be placed in an institution. A list of private institutions of this character has been made by the library department of the Institute, of which we have availed ourselves in giving

addresses to those who desired them. Perhaps the best way in which to present the actual work will be to give summaries of a few cases, with the methods used and the recommendations made.

Case A. is that of a boy of seventeen living in a suburban district. The family history, so far as could be ascertained, is good. Two older brothers are living, both normal. One younger sister died at the age of two, of what was described as "brain fever." There was nothing abnormal in the conditions of pregnancy nor of birth. The child was fed artificially, was a sickly child, and did not walk until the age of two. At four he had a probable epileptic fit, and at eight epileptic attacks began to occur monthly and lasted until the age of fourteen, when they disappeared. These always occurred in bed, and were attended by frothing at the mouth, biting of the tongue, and spasmodic movements; all this lasted only a few seconds, when the boy would go to sleep and afterwards know nothing of the attack. The boy entered school at six and continued until fourteen, but was unable to get beyond the fifth grade. In school he was indifferent toward his work, not very well behaved, and had attacks of solitude.

On the cessation of the attacks at fourteen he developed a strong Wanderlust, and ran away from home in all five or six times, jumping freights for his transportation. He was always found and brought back, though at one time his wherabouts were unknown for a period of two weeks, during which time he obtained a position in a mill in a nearby state, which he filled with fair satisfaction until the circumstances aroused the suspicion of the foreman, who wrote to the father (the boy had given his correct name and address). Since leaving school he has worked for his father, a florist. He does the work fairly well, with a little tendency to laziness and to fits of temper. After a day's work he is made to go to bed in the early evening, and his diet is strictly supervised. Excitement of any sort tires him greatly. He was brought to the clinic by his mother, who was anxious to know if anything could be done with the boy. Physically the boy had a dull expression, rather shuffling gait, no external stigmata, but the presence of Hutchinson teeth was noted. His vision and hearing were normal, his reflexes were in good condition. His height was 167 cms, his weight 56 kilos. The chest deflated gave 88 cms, inflated, 91.5. With the right hand the grip was 53 kilos, with the left 52. The head diameters were 7.1 and 6 inches, at points of greatest length and width. The head girth was 54 cms. Size, form, color, and distance were recognized. The test of tactual perception with the æsthesiometer gave, when the points were at zero distance, the sort of "one-two" rhythm referred to above. Tests of immediate memory gave a memory span for only five numbers. From a list of ten related words to be reproduced immediately by the subject, five were remembered, and the same from a list of ten unrelated words. . . Tapping in unison with the metronome presented little difficulty. In the counting of groups of one hundred letters, the subject showed an average time per hundred of one minute and nine seconds, and a mean variation of six seconds. His reaction tests showed an average of 155 sigma, and a mean variation of 50 sigma, which of course is not great during a series of twenty-five reactions. When given a stimulus word and told to associate freely with it as fast as possible for three minutes, he gave 59 words with many repetitions and pauses during which he had to be urged not to stop, and showed a tendency to simply name objects around him until he was made to close his eyes. He was also given a list of reaction words. The association times here averages about

2.5 seconds, and the reaction words show the prevalence of egocentric reactions (that is, the subject interprets the words as having personal relations) for example, to the word "wife" the reaction "my" is given, the word "dance" gives the reaction "I," etc. Many of his reactions also belong to the predicate type as "water"—"cold," etc. At one time a curious rhythm was observed, by which one word would be reacted to by "I" the next by "You." In general, the reaction type suggests strongly a limited order of intelligence. Here as in the free association the attention was variable, and had constantly to be recalled to the task in hand. Simple problems in mathematics were given, addition was done correctly, subtraction and multiplication with some hesitation, but he failed utterly to do a simple example in long division. He read in a monotonous voice, with no expression (he reads nothing practically at home), and wrote a very labored hand.

It was evident that with the limitations of his mental capacity, it was hardly wise to think of returning the boy to school, as the parents had suggested. Also, in view of the fact that unless a very careful regimen was kept up the epilepsy might return, led the examiners to consider that an out-door trade was the sort of thing to which the boy was best fitted. As he was somewhat interested in the work of florist, there seemed to be no reason why he should not keep on with it. But as one of his grievances seemed to be that he was earning no money and was not independent, it was recommended that a position be found for him with some one other than his father, but where he could be at home at night if possible, in order to see to the keeping up of the necessary regimen. Fortunately such a position was possible which fulfilled the necessary conditions. The boy was also taken by himself and talked to. He was given to understand the importance of taking care of himself, and the fact that if he became careless of physical conditions his malady might return. The effort was made to impress upon him that his habit of running away would be the worst possible thing for the independence which he desired. He was made to feel the importance of having a definite trade, and not merely drifting, and the advantages of such a trade as the one he had been following were pointed out to him. The mother was told of the importance of plenty of plain, wholesome food, plenty of sleep and the avoidance of excitement for the boy.

Case B.

Male, 12 years of age, fairly well developed physically, bad family history, mother white, father colored, and for years an alcoholic, eventually died of alcoholism and consumption; child's maternal grandmother became insane at climacteric and died in asylum, maternal grandfather was a heavy drinker in early days, mother's paternal grandfather was insane and a suicide, mother's maternal great aunt was insane and died in asylum, child's father died at about the time of his birth, child has one brother older, who is about the average in mentality, but he is in the Lyman School for larceny.

Gestation: all during the period of gestation the mother was worried by the alcoholic and sexual excesses of husband, and was frequently subject to his brutality two months before birth of this child the father returned home drunk and abused wife, he struck her in the face and finally after mistreating her unmercifully, he hurled her across the room where she struck her abdomen against a machine, there she lay helpless for some time. Mother worked as washer and ironer till three or four weeks before birth of this child; mother had an aversion to bringing a colored child into the world.

Labor was difficult and instruments were used, mother returned to work four weeks after birth of the child, she nursed him only at night, maternal grandmother fed him on milk during day.

Personal history: child weighed 11 pounds at birth, when two years of age he was struck on head with a broom handle, he became unconscious, vomited and raved for some time, he was sick two weeks at this time, mother believes that he was never the same after this accident, measles at three years of age, whooping cough at nine years, during this he was sick ten weeks and he coughed till he had hemorrhages, child was nearly two years when he began to crawl, he was between three and four when he began to talk and walk, he has night terrors and often screams out in sleep, enuresis till a few weeks ago.

The woman has had the following children by a second (colored) husband: girl 10 years, girl 8 years, boy 9 years, girl 7 years, boy 4 years, boy 2 years, all of these are living except the boy of four who was a "blue baby," he died about this age.

The boy was characterized as nervous. quick-tempered, forgetful, not too honest, but rather affectionate. He is easily led by older children, but belongs to no regular gang, and rather inclined to solitude. He performs simple duties about the home fairly well. He entered school at the age of eight, and after one year in the first grade, was sent to the special class, where he is in the lowest section. Here he is considered lazy and inattentive, with no particular aptitudes, but a liking for tools and music. The weight of the child was 33 kilos, height 137 cms, height sitting, 74 cms. The grip with the right hand, 15 kilos, with the left 20. The head diameters were 6.3 and 5.6 inches, the head girth 52 cms. Vision and hearing normal. Three tests in replacing the blocks in the form board gave the times, one minute eight seconds, thirty-nine seconds, and thirty-nine seconds respectively. Perception of color, form, size and distance good. Motor co-ordination is also good. With regard to the perception of weight, the child was unable to distinguish weights of six and twelve grams, only lifting one of the offered weights for the most part, and immediately pronouncing that the heaviest. He recognized the difference in length between lines of five and six cms. He copied a square and a diamond, but failed to put the two portions of an oblong together to complete the figure. Asked to describe a picture, he only enumerated details, without a trace of action. His memory was good only for four place numbers. In tapping in unison with the metronome he was fairly successful, keeping pace well with the different rates. His reaction times averaged 345 sigma, with a mean variation of 135, which is large. . . Attempts at association tests failed. Mentally the child is of the age of about six years, six years behind his real age. The case is clearly an institutional one, and recommendations were made accordingly.

Case C.

Female, age 12, well developed and of healthy appearance, good family history, prolonged gestation, labor nine hours duration, delivery by instruments, artificially fed, no children's diseases except whooping cough and mumps, at two years of age fell and hurt head (not severely), backward in walking and talking, complains of occasional headache. Ears, nose and throat (had adenoids removed some time ago) normal. One diopter of astigmatism found in each eye, and correction ordered.

Mother gave history of "not wanting a child at this time," etc., then told of an "accident" when two months pregnant, which seemed to indicate that an attempt at abortion had been made.

The child was characterized as nervous, quick-tempered, timid, affectionate, willing to try. She is fond of playing with dolls and of pictures. She entered school at the age of seven, and remained at public school for two years, not being promoted beyond the first grade. Then she was kept at home for two years, after which she was sent at the recommendaton of a physician to a private institution. Here she remained for a year, since which time she has been at home, with no attempt to return her to school. In school she was well-behaved, but inclined to solitude, and seemed inattentive.

The girl's weight was 36.2 kilos, height 155.5 cms, height sitting 80.5 cms. The head diameters were 6.7 and 6 inches, the head girth 51.5 cms. There was a noticeable flattening of the head in the occipital region. The grip with the right hand gave 15 kilos, and the same with the left. The form board test was done in thirty-six seconds the first time, and then in nineteen. The control of the larger muscles, of the hands and vocal muscles was fair. A slight thickness in speech was noticeable. Perception of color, form, size and distance were correct. The æsthesiometer gave a limen for the ball of index finger of about three mms. The mental level, according to the Binet tests, was eight years. Memory for a list of ten unrelated words gave a total of seven correct, for a list of ten related words only four. Six place numbers could be reproduced. Reaction times averaged, for twenty-five trials, 285 sigma, with a mean variation of 85 sigma. Tapping in unison with the metronome was very difficult for the faster rates. In a test of the maximal rate of tapping, thirty-seven squares were dotted in thirty seconds, and two omitted. In marking out one hundred A's the time was six minutes, eleven and one-fifth seconds, and forty-eight of the hundred were not crossed. No letters were crossed incorrectly. In the association tests, the list of nouns associated with given adjectives was well done, the list of opposites and the whole-part list with more difficulty.

The child read matter of about second grade difficulty, but without fluency. She wrote a laborious hand, having great trouble in holding pencil or pen in correct position. In arithmetic she could count to one hundred, could add one place numbers to one hundred, but neither add nor substract numbers of more than one place. The multiplication tables presented great difficulty for her, but the table of threes, which was partially known, was learned while the child was under observation.

Division only of the smallest numbers could be done, and this for the most part with the aid of counters. The result of the work was to show that, although of course general defect was present, the case was one of a comparatively light degree of defect, and considerable improvement could be anticipated with proper training. As the parents desired to keep the child at home and employ the services of a teacher, recommendations were given as to the course to be followed.

These were, in summary, as follows. First, the giving to the child of some simple, regular duties about the house, for which she should be made to feel responsible. Next, for the training of the larger muscles, light gymnastic exercises were described, including, besides those of a more strictly gymnastic character, such things as skipping a rope, practice in throwing and catching a ball. Finger exercises were given to develop control here, and the learning to play the piano was suggested, as were drawing and painting.

On the mental side, the child's mental level in reading, writing and arithmetic was described for the parents, and the attempt made to give suggestions by which the work could be logically built up

from this level. In arithmetic this of course began with the development of more surety in the addition of numbers up to one hundred, and the learning of the tables, and went on by simple steps through the fundamental operations.

For writing, it was suggested that copying ought at first to play a large part, but that the emphasis should soon shift to original work. It was suggested that a short composition might be written each day, perhaps to take the form of some description of an event of the day, so taking on the form of a diary. Regular practise in reading was also suggested, which should keep pace with the writing.

To these recommendations were added those of plenty of exercise in the open air, regularity of sleep and conditions.

It will be seen by all the foregoing in just how plastic and experimental stage the work of the department is, and will be for some time.

Now a word as to some of the things we aim to do.

In the first place, there ought to be a list of physicians coving the different specialities in the city to whom the patients could be referred, and who would send reports back to the clinic. The fact that the patients might have to pay for such service would, it hardly seems, be an objection in the majority of cases, and might also tend to make them feel the thoroughness of the work which was being undertaken. The results furnished us by physicians, each going into the thing from his own point of view, would then furnish the examiners with a broad basis for recommendations.

The question must also be soon faced as to whether the work in the clinic is to be designed primarily for people in this vicinity who bring children back and forth for observation, or whether the needs of people at a distance ought not to be considered more than now. Inquiries which have been made over and over again relate to the possibility of our establishing a school for defective children in connection with the work. The longer the work continues, the more desirable this seems. Such a school ought to be in charge of a teacher who has had considerable experience in work with defectives and of a matron who ought to be a nurse, with such assistants as numbers would warrant. There should be an arrangement by which the services of a physician would be available. Here children could be brought for a course of study, and at the same time intensive study of the cases could be made under the most favorable aspects. Such an institution ought to have some endowment, so that fees could be made of a size to appeal to people of moderate means, with the understanding that the cases were to be used for study. Such a school, with the opportunities which it would afford for research, would be almost unique in the country, and ought to render services of the greatest value.

In the immediate future, the question of proper tests will

occupy a considerable share of the work. It is hoped to make the collection now on hand still more inclusive and valuable. A descriptive bibliography of the more important literature in the field is to be compiled. The question of speech defects must also be considered, as many of the children brought to us are so afflicted. Here a considerable number of books are available, and others have been ordered.

V. EXPERIMENTAL DIDACTICS IN THE CHILDREN'S INSTITUTE

By Amy E. Tanner, Ph. D.

The work in this subject was not begun until October, 1909, and has been unavoidably delayed, and interrupted somewhat, as it was necessary to complete and revise a study of Modern Spiritualism begun last year now in press with D. Appleton & Co.

Previous to the organization of the institute some work in experimental pedagogy had been done in Dr. Burnham's courses, and in some instances Dr. Hall's and Dr. Sanford's students had chosen thesis subjects for the Ph. D. in this field. This work is as follows:

W. F. Book, The Psychology of Skill, pp. 181.
C. E. Browne, Psychology of the Simple Arithmetical Processes, 1906, pp. 37.
David Gibbs, Pedagogy of Geography, 1907, pp. 100.
E. B. Huey, Psychology and Physiology of Reading, 1901, pp. 44.
D. E. Phillips, The Teaching Instinct, 1899, pp. 59.
E. J. Swift, Studies in the Psychology and Physiology of Learning, 1903, 53 pp.

Of work still unpublished, Dr. Louise Ellison's thesis is on the Psychology of the Learning Process, Mr. Meyerhardt's on Reading and Arithmetic, and Dr. Misawa has summarized all the experimental work in drawing in a series of articles of which the department has a copy. Dr. Ellison also has published an article on the Acquisition of Skill, *Ped. Sem.*, March, 1909; and Mr. H. W. Chase one on Some Aspects of the Attention Problem, *Ped. Sem.*, Sept., 1909.

On taking up the work two important problems were those of the scope and boundaries of the subject, and the establishment of a pedagogical laboratory.

The term experimental pedagogy has as yet no accurately defined meaning. On one side it merges imperceptibly into didactics, general methods, school administration, etc., and on the other into educational and experimental psychology, and child study. We may, however, follow Lay in giving it three stages: 1, forming the hypothesis; 2, carrying out the experiment; 3, evaluating results. General and special methods and educational psychology usually stop at the first stage; some individual teachers and schools, who really test methods in practice and modify their theories by the tests, attain the second stage, but usually do not compare their own individual work enough with that of others, and this is necessary before results can really be evaluated, and the work completed.

On the other side, experimental pedagogy is distinct from experimental psychology in that it seeks primarily to experiment under the ordinary conditions of daily life instead of under the highly artificial

ones of the laboratory with complex apparatus. Experimental psychology, *e. g.*, may make memory tests with nonsense syllables, but the results are of less value to experimental pedagogy because the learning child in the schoolroom is not under at all the same conditions.

But experimental pedagogy in this sense would cover nearly all of the departments of the Institute. It would include hygiene, eugenics, linguistics, juvenile crime and vice, and work with subnormal and abnormal children besides religious and moral education. The term seems to be used in this very broad sense by the German writers, when they speak of "experimentelle Pädagogik," and the relation of these various subjects to the larger one that I have been discussing seems really to be one of subordination.

This, however, is too large a group to be included in one department especially if the Institute should grow as it is hoped that it will. It seems, therefore, desirable that the department should not take the title of experimental pedadogy, but of experimental didactics, and limit itself to a subdivision of the work outlined above, viz., to ascertaining the most favorable conditions for the normal mental development of school children. It would thus include on the one side the school curriculum in all its phases, and, on the other, the mental processes involved in studying the school subjects, including mental fatigue, memory types, psychology of the question, etc., etc. The emphasis upon normal development marks the boundary between experimental didactics and work with sub- and abnormal children; and the emphasis upon mental development, that between it and school hygiene, although there is some unavoidable overlapping here because some of the most important conditions for normal development in school are hygienic. Limiting it to the school and to mental development also marks it off fairly well from eugenics, and from religious and moral education and juvenile crime and vice, although there is some overlapping here too. There is also overlapping with linguistics when we consider the school teaching of language and literature, but otherwise the two are distinct.

Equipment of a Laboratory

Accepting these boundary lines, the next important problem was the fitting up of a pedagogical laboratory, and of its relations to the laboratories already in existence in the University and College. Practically all of the tests upon school children are made with apparatus originally invented for anthropological and psychological tests, and since the University laboratories for psychology and school hygiene were well equipped for these, it was desirable to avoid unnecessary duplication. It was also realized that in a subject as new as experimental didactics, the investigator of any special subject would be somewhat under the necessity of inventing his apparatus or modifying that already in existence, and therefore, that it would be better to delay extensive purchases until they were desired for individual problems.

Through the courtesy and aid of Drs. Sanford, Burnham and Porter, and upon the basis chiefly of Schulze's Instrumentarium, the following apparatus was bought: Jacquet's graphic

chronometer, stop watch, Marey's tambour, Dubois's ergograph, tachistoscope, set of ten graduated tuning forks, Seashore's suggestion blocks, Nagel's charts for color discrimination, set of puzzle pictures, and various small items such as rubber, kymograph paper, telegraph key, etc., etc., the total sum expended being approximately $125.00.

If more exact recording instruments should be needed, those in the psychological laboratories will be available through the kindness of Drs. Baird and Porter, and also, in the case of special individual researches, such instruments as the spirometer, anthropometeric apparatus, sphygmograph, pneumograph, plethysmograph, esthesiometers and algometers, kinesimeter, color wheel and other visual apparatus, etc.

By this arrangement it will be possible for the pedagogical laboratory to give even the most exact tests and to have the use of their very complete equipment. The pedagogical laboratory is, therefore, in a position to undertake any experimental problem which it may consider desirable, without being hampered by lack of apparatus.

Work of the Department During the Year

In addition to the material already referred to, the Department was fortunate enough to fall heir to some of the results of former President E. H. Russsll's work at the Worcester Normal School. This consists of between 50,000 and 60,000 observations on children, which were made under Mr. Russell's direction by Normal School students during a period of 25 years. The method was as follows: Mr. Russell furnished slips of paper to the students with space at the top for the observer's name and address, sex, age and nationality of the child, and the length of time between making the observation and writing it down. White slips indicated that the observation was made by the reporter; yellow, that it was a reminiscense; pink, that it was hearsay, and green that it was copied from some book. The students were told simply to write down what they saw as soon as possible, with as little inference and generalization as possible, and Mr. Russell's hope was that thus an objective account could be secured of children's sayings and doings which might in course of time have real scientific value. Previous to this he had tried to obtain material by questioning the children but had become convinced that this method seriously distorted the real facts, and so he adopted the method of the "still hunt," hoping thus to get pictures of children behaving naturally in their natural habitat. The data thus obtained are simply raw materials for pschologists to work over and interpret.

This task was assigned to the Department. A few of these

50,000 odd observations had already been used in Miss Haskell's article on Imitation, and a small beginning had been made of classifying others, but most of the many bundles were entirely miscellaneous and so must, first of all, be at least roughly classified, so that students interested in any special line of activity and thought would find the observations on that subject put together.

The Department was fortunate enough to have three assistants for the task, Dr. Louise Ellison, Mr. Sakyo Kanda and Mr. Yasuma Nakamura. Each of us spent a part of each day for ten weeks, the sum total of each day's work amounting to ten or eleven hours, before the vast mass of papers was finally packed away in the cases. In doing the work there were various purely mechanical difficulties which ought to be mentioned perhaps as showing some of the troubles. In the first place, while most of the writing on the slips was unusually good, the mere fact of its being script and on colored paper caused eye strain, and before we had finished some of us were suffering from headaches as a result of the eye strain and all of us had become quite conscious of our eyes.

Another mechanical difficulty was that of sorting. We had three long tables for the slips and we were obliged to stand most of the time because we could not reach while sitting. The combined fatigue of eye strain and standing for two or three hours a day was considerable.

By the end of the first week we had about 60 heads, and after that relatively few slips were found which did not readily fall under one of these heads. Many of these rubrics could be easily subsumed under larger heads, and in the final summing up of the results we obtained the following classification:

1. Imitation, 3,000 observations. 2. Play, including here toys, and manipulation of objects, 4,000. 3. Constructive and inventive tendencies, 500. 4. Bodily control, motor habits, etc., 1,400. 5. Sense of bodily self, 800. 6. Clothes and ornaments, 1,200. 7. Sense activities, 500. 8. Interest in noise, music, and rhythm, 1,000. 9. Emotions related to sense of self, self aggrandizement, rivalry, jealousy, showing off, pride, teasing, bragging, etc., 2,400. 10. Fear, 1,600. 11. Anger, 900. 12. Forms of the social instinct, likes and dislikes, sympathy, gratitude, generosity and selfishness, etc., 1,900. 13. Spontaneous drawings, 1,000. 14. Spontaneous compositions, poetry, letters, and reproduced stories, 800. 15. Various forms of the moral sense, 600. 16. Discipline and treatment by adults, 700. 17. Ideas about school and teacher, 700. 18. Interest in literature, learning to read and write, spelling and pictures, 800. 19. Humor and jokes, 700. 20. Nature and natural phenomena, 2,200. 21. Religious subjects, 600. 22. Superstitions, 800. 23. Language, 3,000, with more or less complete vocabularies of 51 children. 24. Intellectual processes, memories, associations, wishes, perception and observation, attention, 3,300. 25. Concepts and reasoning, 7,000.

There are also various smaller groups which probably have little or

no value in themselves, but which might be useful as preliminary to a further investigation or corroborative of one, such as, peculiarities and abnormalities, moral ideas, money sense, barter and bargaining, fancies, imaginations, ideas about death and funerals, ideas about Santa Claus, animisms and anthropomorphisms. There are also 66 series of observations on children, running from September to June. These differ greatly in completeness and probably are valuable chiefly for isolated observations which they may contain.

These data are now at the disposal of any student who may wish to use them. Mr. Nakamura is already using the collection on sex differences, Mr. Hanley the one on the social sense, Mr. Magni the one on language and I the one on conception and reasoning, in which I have also included children's lies, schemes and excuses, as giving the best cases of the daily exercise of these faculties.

This collection on conception and reasoning numbers some 8,000 observations, practically none of them on children in school, and nearly all of them on children below fourteen, who are Americans of at least one generation, from the middle class. Judging from the names, the earlier ancestry was either American, Irish or Scandinavian, with relatively few French and practically no representation from south or southeastern Europe. This material seems to represent a homogenous group and the numbers are probably large enough to warrant general conclusions for that group.

Here again the mechanical difficulties of reading and sorting have been considerable. It was first necessary to re-sort the slips, into such classes as definitions, time and place associations, inferences based on likeness in color, form, movement, use, etc.; inferences from names. Then there were the concepts of such things as the earth and natural objects, of the structure and mechanism of objects, of growth, life, relationship, etc., etc. This classification involved re-reading all the slips, and after it had been made, each sub-division had to be arranged by age and sex. This part of the work is now completed and also the written summary of about 1,000 of the slips. The rest of the work will be comparatively easy, and the article of 75 or 80 printed pages will be completed for the *Pedagogical Seminary* by September.

The major work of the Department, however, has naturally focussed about the preparation of the six Conferences which are to be given this spring, and of which the outline is as follows:

Conferences on Methods in Experimental Didactics

1. The field of experimental didactics; its relation to child study, educational psychology, practise and methods of teaching. Brief account of its status in the United States and

Europe, with reports on pedagogical museums and laboratories.

2. Observation method, what it is, most important studies on individual children, Mr. Russell's data. Questionnaire method—reading of typical questionnaires, and having the students answer parts of them, at the same time writing below each answer their difficulties in giving it and their criticisms of the question.

3. Using these answers, as well as the literature on the subject, an evaluation of the questionnaire method and summary of its results, citing the most important and the poorest pieces of work.

4. Two experiments, to test the accuracy of narratives, so arranged as to be comparable with Stern's, one involving testimony on a series of events, and the other a description of a place, each followed by cross-examination.

5. Account of Stern's "Aussage" experiments, comparison of our results with his, and critique and evaluation of the method in pedagogy.

6. Psycho-analytic method: description of the tests on normal people with classes. How to make out a list and interpret the results; obtaining time reactions, and normal variations in time reactions. Limitations and value of the method.

This course is necessarily very incomplete. The following subjects may be added: statistical methods, with practise in working up data and using the formulæ; tests of general intelligence; common laboratory tests for children, with summary of the important results and practise for the students in fitting up and using the apparatus; summaries of experimental work in reading, writing, spelling, number and drawing. In all these topics the course may be indefinitely expanded from year to year, some of them becoming topics for an entire course, with research work as their most important part.

Plans and Ideals

If experimental didactics has for its end to ascertain the best conditions for the normal development of school children, then its investigations take two main directions: 1, the discovery of what normal development is; 2, the school conditions most favorable to it. The first, besides the hygienic factors, includes such things as the influence of race, age, sex, mental types, degrees of talent, and the psychology of the learning process with each school subject. The second naturally correlates with the first, including especially the interactions between teacher and pupils, and pupil and pupil, methods of presentation, uses of pictures, charts, toys, tools, etc., etc. On both sides it is evident that experimental didactics

may make a good beginning by the use of the questionnaire and other methods, but that the theories based upon such returns must be merely tentative until they are tested in the schoolroom, and on children of various ages and races. The ideal of the department naturally follows from this, as follows:

1. An experimental school, containing a small number of children (perhaps fifteen of each age) from the kindergarten age up. Each child should be studied individually, and a record kept of his reactions to the methods of teaching employed in each subject, together with a personal history which should include not only a sketch of his inheritance and home conditions, but anthropometric and psychological tests taken at regular intervals. The fuller these records could be, the better, so that there would be a fairly complete sketch of any child who remained in the school from beginning to end. If also before entering the school records could be made by the parents the results would be still better.

With these small numbers of children, various methods of teaching, plans for government and moral training, books, devices, etc., etc., could be tried and their effects recorded, with the teachers' critiques.

It is the hope of the Department to have a small group of little children who have just begun to ask questions, in order to study the psychology of the question and answer. Common as questions and answers are both in home and school life, and numerous as are the platitudes about them, careful experimenting and even careful observation seems almost completely lacking. There are semi-legal discussions of cross-examination, and Stern's studies on the accuracy of testimony, a little work by Binet on suggestibility in questions, and some observations on the age when children begin to ask questions, and the sort, but as yet the work is very fragmentary. If stenographic records could be taken of groups of children on different ages, under carefully arranged conditions, we should have a record of the natural development of questions and answers that would throw much light upon methods.

2. But of course such work cannot be final, both because the numbers of children would be small and because they would probably be a highly selected group. The next need, therefore, is co-operation with model and public schools all over the country. The Department ought to be in close touch not only with similar departments in other Universities, but still more with Normal Schools, and public school superintendents, and grade teachers, so that when a certain method has been tried in the experimental school and approved, the Department can suggest to superintendents and teachers a similar trial under their conditions, and can to some extent

guide the trial. This would of course be a wholly voluntary thing on both sides, and will need to be developed gradually. Both sides would profit largely by it. The schools could suggest pressing problems and keep the Department close to actual conditions; the Department could in some cases show why certain methods must fail and suggest better ones. It would close the present gap between abstract child study and the public schools as nothing else would. Even so early as this desire to co-operate in research has been shown by some, and it is certain that some teachers would co-operate in testing methods as far as their superintendents would allow.

3. Finally, when any method has survived the tests both of the experimental school and of the co-operating schools, it should be printed in a leaflet form which would be accessible to any teacher for a small sum. These leaflets or pamphlets should summarize the investigation and its results so simply, succinctly and accurately that teachers without any professional training can understand them. Only thus can the Department reach its highest effectiveness.

In this connection, the Department may begin next fall to summarize the important current publications and to print them in leaflets, which any one can obtain by writing to the Department. In this way the practical results of much of the work both in this country and abroad will become accessible to every one.

The Department may also print in a similar manner summaries of the most important work already done, such as are given in the following bibliography:

1. MEUMANN, ERNST. Vorlesungen zur Einführung in die experimentelle Pädagogik, 1907. Bd. 2, pp. 1000. (A summary of all the important previous work.)
2. LAY, W. A. Experimentelle Didaktik, 1903, pp. 595.
3. —— —— Experimentelle Pädagogik, 1908, pp. 125.
4. SCHULZE, RUDOLF. Aus der Werkstatt der experimentelle Psychologie und Pädagogik, 1909, pp. 292. (A summary of methods and description of apparatus, copiously illustrated.)

4a. WHIPPLE, G. M. Manual of Mental and Physical Tests, Baltimore, 1910, pp. 400.

5. CLAPARÈDE, E. Psychologie de l'enfant et Pédagogie experimentelle, 1909, pp. 282.
6. THORNDIKE, E. L. Principles of Teaching, 1906, pp. 293.
7. CORNMAN, O. P. Spelling in the Elementary School, 1902, pp. 98.
8. BURNHAM, W. H. Hygiene and Psychology of Spelling, Ped. Sem., Vol. 13, 1906, pp. 471-503.
9. EBBINGHAUS, H. Ueber das Gedächtniss, 1885, pp. 169.
10. MÜLLER and SCHUMAN'S, and NETSCHAJEFF'S articles on Memory in the Zeitschrift für Psychologie und Physiologie der Sinnesorgane, 1894, and 1900.
11. OFFNER, M. Das Gedächtnis, 1909, pp. 238.

12. Müller and Pilzecker. Experimentelle Beiträge zur Lehr vom Gedächtniss, 1900, pp. 300.
13. Huey, E. B. Psychology and Pedagogy of Reading, 1908, pp. 443.
14. W. Stern and others, on defects in testimony, as given in the various volumes of his Zeitschrift, Beiträge zur Psychologie der Aussage. Leipsic, 1903-6.
15. Jung and Riklin's Diagnostische Assoziationsstudien, running through the Journal für Psychologie und Neurologie from 1904 on.
16. The *Pedagogical Seminary* has also at various times published articles of much practical importance to all who deal with children, such as Dr. G. Stanley Hall's article on Children's Lies, *Ped. Sem.*, Vol. 1, 1891, and M. H. Small's on the Suggestibility of Children, *Ped. Sem.*, 1896, pp. 176-220.

In all these cases, and in many others, the results of the work are of practical importance to teachers, and yet are not very accessible, so that the Department believes a real service can be done by supplying full summaries.

VI. DEPARTMENT OF CHILD LINGUISTICS

By John A. Magni, Ph. D.

Child linguistics is a special branch of child psychology. Historically as well as in subject-matter the two are most closely related. As a new science it must avail itself of all data well established by other kindred sciences, such as philology, physiology of speech, biology and psychology, including speech defects. Being still in its infancy, child linguistics must not attempt too much; caution is necessary. As regards its purely theoretical function, the time has not yet come for bold attempts, sweeping generalizations like those rather premature ones by Romanes and Baldwin. To make it a science that will yield an heritage of pedagogical truth for future generations, careful, painstaking research must be done from the start. Reliable methods must be elaborated. Furthermore, while utilizing much valuable material already gathered, a vast body of authentic facts have still to be collected, sifted, compared and tested before any definitive deductions are made for pedagogical use. The necessity of such a procedure is readily recognized, not merely because child linguistics is a young science, but is an independent branch in genetic psychology.

The real significance of child linguistics is to be found in the possibility that it may establish unique (and independent) phenomena of psycho-genesis. In the earliest manifestations of the psychic powers, the very first faint glimmerings of a meaning, as discernible in the first inarticulate sounds and babblings of the child, we must seek the birth of that most enigmatic phenomenon—human thought! Here it appears that we are nearest the union of, or the indifference point between, the psychic and the purely physiological. Our new science may, in so far as it applies itself to the study of genetic origins, some day be able to show that the origin of language is altogether physiological, mechanical and unconscious, in other words, that the appearance of language is due to universal cosmic laws, and that in human speech we have a self-revelation of the universe objectively predetermined and as necessary as the sound-vibrations of a bell when struck, and not an arbitrary interpretation, a distorted image subjectively determined. Equipped with a more accurate knowledge of the nervous system and of the nervous force, and aided by

more refined and perfect methods, as well as a keener faculty of observation the future child linguist may be able to decide whether the hypotheses formulated by F. Schulz, Steinthal and others, that only what is experienced as vibrations of the nervous system can be expressed in language or in Steinthalic words that "man speaks as the grove soughs" in the wind, is correct or not. If so, child linguistics may, although chiefly and essentially a practical discipline, contribute something towards the satisfaction of man's instinctive intellectual cravings.

Conferences

In order to enlist the interest of educators and friends of education generally, a series of conferences have been begun at which various topics are discussed, and suggestions as to methods of work and sources of information on the subject collected. First there will be an historical review of the work already done in this field. Methods of observation and study will be expounded and the relative merits and value of these methods explained. The field is a comparatively large and very interesting one. Hence it will be necessary to devote several meetings to it.

After an historical introduction, topics like the following will be considered: The Development of The Inner Speech Form; The Origin of Percept and Concept; The Evolution of Parts of Speech; Development of the Apprehension of Words; Original Words of Children; Vocabularies; The Importance of a Large and Well Chosen Vocabulary; How to acquire such a Vocabulary; Development of the Sentence; Relation Between the Development of Speech in the Child and the Race; Pedagogy of Teaching Language in the Kindergarten and in the School, etc. A few of these will be given this year. In the department, if not in the conferences of this year, is included also the specific pedagogy of the English language in the home, the kindergarten and the grades, a survey of the conclusions from the studies of aphasia, stammering, stuttering and other speech defects, and the institutions and methods of their treatment, gesture, mimesis, etc.

Bibliography

Although child linguistics is only a few decades old, there is already a goodly number of books, pamphlets, monographs and articles on the subject. An exhaustive bibliography of these is now being made. On child linguistics proper, it will contain all that has been written by such pioneers and representative authors and students of child psychology as Tiedemann, Löbisch, Sigismund, Preyer, Egger, Pérez, Ament,

Lindner, Oltuszewski, Stern, Meumann, Scupin, Gheorgov, Sully, Taine, Darwin, Gale, Tracy, Hall, Chamberlain, *et al.* Besides these there will be an extensive and well selected collection of books on speech disturbances and defects, *e. g.*, stammering, stuttering, aphasia, paraphasia, word-blindness, etc., by authors like Gutzmann, Kussmaul, Colombat, Chervin, Séglas, *et al.* This subject, so important from a pedagogical point of view, is now receiving a great deal of attention. It is naturally a branch of child linguistics and in collaboration with the section for abnormal psychology and defectives we hope to obtain both practical and theoretical results. Finally, since the biogenetic aspect of soul life has come to the fore in psychology, the relation of infantile speech to that of the race, or a comparative study of the two is most inviting. Hence a collection of literature on comparative philology, on primitive languages, especially of American aborigines, and on the psychology of language generally, is of supreme importance.

An exhaustive study of children's vocabularies, nature and range of ideas of this age is one of the foremost *desiderata* of modern scientific pedagogy.

Our Aim

Despite centuries of pedagogical endeavor to improve language teaching, the limit of efficiency is far from being reached. The boy or girl entering high school or college is everywhere hampered and his or her progress in the acquisition of knowledge is greatly impeded, simply because of a too limited vocabulary and a too imperfect command of the mother-tongue. Not only is language, what Wilhelm von Humboldt said a hundred years ago, the formative organ of thought, but also the bearer and transmitter from age to age of the precious treasures of human experience and achievements. It is the real *sine qua non* of an age-long and painfully acquired culture. The person in whom this organ is most highly developed is certainly the one who is most sensitively attuned to the invisible realities of the spirit, and the true heir of all the ages. Words full *of* and throbbing *with* the concrete, sensuous life of our race have become desiccated, lifeless, pale abstractions. Consequently we feel too superficially the spirit and power of the words we use. To raise this submerged world of humanity, to make it live, breath and laugh again in the living word should, therefore, be our aim. But to achieve this Herculean task we must begin early.

As the soul gradually unfolds, word is added to word and new relations are consciously assumed, an inventory of the child's *Sprachschatz* should be made from time to time to ascertain the proportion or mutual relations of the different parts of

speech used, or the presence or absence of any grammatical categories. In this way parents and teachers would learn to know the natural bent and the most impressionable phases of the young soul and could, therefore, with tact and skill, aid nature where it may be lax or deficient, and this, too, at so early a period of life, that psychic symmetry might be attained from the start. For it is quite possible that modern as well as ancient educators are wrong in their assumption that nature sends every human being mentally lopsided into the world.

To institute annual vocabulary tests from about the second year of life and continued through kindergarten, primary and high school seems to me a great *desideratum*. To promote a new linguistic pedagogy based on established facts in child psychology, to arouse a deep sense of the imperative need of a better, a scientific method of language instruction in early infancy and all through the different grades of school, to implant from the first a genuine love for the very best form of the mother-tongue, and create an abiding interest in the hidden phyletic contents of words, phrases, idioms and structure of speech,—these should be some of the practical results aimed at by child linguistics.

The mere enumeration of some lines of research closely related to our own and directly contributing to the more efficient language instruction, will enable us to form a fairly adequate idea of its magnitude. Thus we find, for instance, that the pathology of speech is an immense science in itself. The various speech defects are therein discussed, their causes and remedies set forth. Now, if language teachers are to meet the needs of all children entrusted to them they should know the valuable scientific information regarding such speech defects as stuttering characterized by spasms in one or all of the three groups of speech-muscles, stammering or defective pronunciation of certain letters, abulia, aphthongia, blustering, hysterical stuttering, periodic stuttering, aphasia, paraphasia, word-blindness, etc. Practically all speech defects have been more or less studied, but much remains to be done. To disseminate such valuable information, as we possess, among teachers and parents is therefore of imperative importance that these defects may be corrected as early as possible. Closely connected with these are errors and lapses of speech asthey occur in every-day conversation. An investigation of this subject is now being made by Mr. DeBusk, of Clark University. A very interesting and suggestive study of these phenomena has also been made by Prof. S. Freud, of Vienna, in his "Zur Psychopathologie des Alltagslebens," 1907. In the same connection E. B. Leroy's "Le Langage, Essai sur la Psychologie Normale et Pathologique de cette Fonction," 1905, deserves men-

tion. The importance of the pathology of speech for child linguistics goes without saying. The ramifications of our subject are almost bewildering, for they are legion. A great deal might be said regarding children's interest in words as mere words, whether it is the sound, the form or the idea associated with the word that creates this peculiar interest, and what is its pedagogical value. Furthermore, in our day of pedagogical innovations and reforms, who doubts that the pedagogy of modern and ancient languages deserves a most serious consideration? Then again, the pedagogy of reading, oral and visual, spelling and writing is a subject of paramount practical value. The following topics are of a more theoretical nature: evolution of the parts of speech, of the inner speech form of percept and concept, figures of speech, development of the sentence, of the ego as revealed in the language of the child and the race, origin of slang and its relation to standard speech, etc.

These are only a few of the lines of investigation open to the child linguist but they will suggest the real magnitude of the work still remaining to be done, and the need of workers in this field. If this section of the department of applied child and adolescent psychology at Clark University succeeds in being an incentive to similar efforts elsewhere, its existence will be abundantly justified, for to attain the high aim set requires an army of trained psychologists.

Experimental Work

Following the example of such men as Preyer, Lindner, Oltuszewski, Ament, Stern, Gheorgov, Shinn, Gale and others, scientific observations of children in early infancy with careful records from day to day of all new speech phenomena will be made. A great deal of material is still needed in order to throw more and clearer light on the most interesting and important of all psychological questions, viz.: the psycho-genesis of the child, a problem whose solution and elucidation is all the more urgent because of its direct pedagogical significance. Further experimental work in child linguistics is also demanded owing to its direct bearing on speech evolution in general. For it is now being recognized more and more that we must look for traces and evidence of the origin and gradual growth of human language, not chiefly, as heretofore, in the most highly developed languages but in the radicals and structure of the most primitive tongues, and in the early utterances of children of different nations and linguistic stocks. Furthermore, a great deal of experimental research must be made with children of the kindergarten age. No continued and serious study of how ideas grow and word-meanings are acquired, has been made during this exceedingly plastic, concrete and for-

mative period of psychic development. Nor have any systematic efforts been made to inventory the child's mind for the purpose of removing vagueness and error in the child's conceptions, much less to ascertain the frequent uniqueness of emotional tone, colors and sense imaginary characterizing the childish words. Here is a fruitful field for experimental work; and whatever helps to make language instruction during this period more perfect and efficient is a decided pedagogical gain.

Other Departments

Arrangements have already been made for courses in other subjects during the year 1910-11, and the following instructors have been appointed: Mr. Edmund S. Conklin, Religious and Moral Education; Mr. B. W. DeBusk, Eugenics; Mr. Rudolph Acher, Psychology, Pedagogy, and Hygiene of Sex.

B. SPECIAL CHILD SURVEYS IN WORCESTER BY CLARK STUDENTS

In *past years* the following students have devoted the whole or a part of their time to the study of local conditions in Worcester:

Mr. A. H. N. Baron, who wrote his Master's thesis on "Juvenile Delinquency in Worcester, Mass."

Mr. B. W. Lanphear, who made a study in College Economics on "The Italian Population of Worcester," under Professor Hankins.

Mr. Griggs and Mr. Dominis, who prepared a paper on "The Economical, Industrial, Religious, Social, Educational, and Political Aspects of the Negroes in the City of Worcester."

Mr. Frederick N. Cooke, Jr., who made "A Study of the Causes of Poverty in Worcester, Mass.," a Master's thesis.

Miss Elnora Curtis has made a study of local theatres.

During the *present year* the following students have investigated the following topics:

Mr. Roche has studied the history of the park system of the city from its inception, and on this basis has set forth the opportunities for play that are now afforded here, with recommendations for the future,—a work that has been made with the co-operation of the Park Commissioners and the new Playground Association described elsewhere.

Dr. Louise Ellison has made a careful investigation of the problems of motherhood here, interviewing the district nurses and midwives, in all tracing the story of one hundred typical births, setting forth the conditions of the poor and outlining reforms needed here in this respect.

Miss Cochran has investigated the problem of clean milk, with the co-operation of the Health Department, and has set forth the story and the difficulties of present methods that prevail here, with suggestions for betterment.

Mr. Acher has interviewed many physicians and others and has visited the local hospitals to investigate the problem of the extent and the sources of infection of venereal diseases in the city.

Mr. Carrigan has worked in the field of juvenile crime, for which he had the previous advantage of some years of experience as a criminal lawyer here. He has investigated the boy gangs and undertaken a careful census of the condition of boys in the reformatory institutions of the city and county.

Mr. Karlson has undertaken a study of the conditions of life for children among the Swedish population of the city.

Dr. D. F. O'Connor, who has had the advantage of years of medical practice here, is investigating various aspects of public and social hygiene in the city.

Mr. Stoutemyer and Mr. Sackett have made a searching investigation of the methods and the extent of the work of the Salvation Army, with special reference to their provisions for childhood.

Miss M. B. Downey has mapped and studied schoolyards with various suggestions and comparisons with the movement for their reform in other cities.

Mr. Cooley has begun a study of the activities of Protestant churches for children, particularly for those outside their own congregations, with reference to various extension lines of activity and with suggestions as to certain institutional church features that might be undertaken.

Dr. Baff has begun the study of illegitimacy and the social evil.

Miss Curtis has begun the study of the chief holidays and also evenings, Saturday afternoons and rainy days and Sundays, with a view to suggestions as to improvement.

Mr. Cashen has studied the activities of Catholic churches along child welfare lines.

Miss Crum has studied certain traits of the vicious, adolescent girl.

Other studies contemplated but not yet begun are those of the child welfare institutions in the city generally: their history, organization, methods, co-operation, etc.; reading for the young in Worcester, including story telling, private loan, school, and branch libraries, etc.; clubs for boys and girls in the city; studies of those of foreign birth in Worcester, including the Canadian-French, the Germans, Armenians, etc., with reference to their old-country beliefs, customs, handicrafts, fecundity, psychological peculiarities, amusements, etc., with an intensive study of some section of foreign population; the activities of the nearly one hundred and fifty fraternal associations in Worcester, in so far as they make special provision for orphans and for poor children.

In each of the above topics, careful and rather elaborate syllabi were first made out, based largely upon the study of the literature of the subject and of similar surveys elsewhere. These were discussed and compared, correlated, revised and commented upon by the heads of the several institutions, by physicians, jurists and others, were finally revised by Mr. Paul Kellogg, head of the Pittsburg survey, and later by his assistant, Miss Florence Lattimore, who made two visits of a

week each here, spending her time in personal interviews, giving directions and suggestions to each worker in turn, often going out with them, and giving all the benefit of her experience and counsel, to which all are much indebted, as well as to the Sage foundation under whom they were working and to Dr. Hastings Hart. The above work by no means includes all that can and ought to be done in this field. Many of the syllabi have been considerably changed, extended in scope in some, and contracted in other, directions to make them more practical and more efficient.

Some of these studies will not be finished this year but may be taken up where they leave off by other students next year, and I hope will be rounded out with more or less completion. It need not be said that there are many other topics open to and indeed greatly needing investigation, which it is hoped may be undertaken in the fall. It is believed that by this work more co-operation can be brought about among local welfare organizations, duplication avoided, and perhaps gaps filled, and a comparative view won by which each can profit by the experience and devices of the others.

Many of the local workers have profited by the cordial assistance of Father J. J. McCoy of St. Ann's Parish and chairman of the Executive Committee of the local organization for child welfare, Father Bernard S. Conaty of the Sacred Heart Parish, and Thomas E. Murphy, President of the Holy Cross College, of which all the Catholic young men engaged here upon these studies are graduates. Without this advice and co-operation they would have accomplished little. In this sense and to this degree, the surveys they have made are joint products due to correlation of efforts on the part of Holy Cross College and its friends, and Clark University. It is significant that this first attempt in this city to correlate the endeavors of Catholics and Protestants is in behalf of the social and material welfare of children and youth. If the harmony which has thus far prevailed continues, it is believed that great good to the city will result, not only for the children but in the way of better mutual understanding and appreciation by Catholics and Protestants of each other's methods, aims, and institutions, and the amelioration of ancient misunderstandings.

All the special investigators have been instructed in making their reports to note details, names, places, and to adhere accurately to facts observed or stated on creditable testimony. They are expected to record without partiality, fear, or favor, regardless of what persons or institutions are affected, in order that their data may have scientific reliability and, so far as possible, be all that proofs of evidence demand if ever legal problems were brought before courts. When this is done in-

vestigators may add in separate paragraphs their own personal impressions, inferences, interpretations, etc., *ad libitum*, but in such a way as will render clear at every point the distinction between fact and opinion. All these records are to be filed and kept under lock and key in the archives of the institution or society under whose auspices the investigations are made. After discussing the many very delicate facts that have already appeared and the contingencies liable to arise, it has been concluded that while no pledges must be given by any investigator, and he must not accept information given him personally on condition that it be excluded from the records, and that everything pertinent to the subject, however obtained, should go down, it is expected and understood that nothing detrimental to any institution or official will be made public without at least first consulting those most closely concerned. If afterwards, portions of the data thus collected be utilized as theses or be printed or published, the academic standards by which this work is rated shall be safeguarded by obtaining the impartial judgments of the best experts in the fields of social service available, in order to avoid all suspicion of attempts to either commend or criticise from personal or prejudiced points of view. It is assumed that all institutions or persons devoted to child welfare earnestly desire to do the best they know and, therefore, are not to be antagonized, still less exploited in any sensational way. The distinction between data gathered and filed in archives and that made accessible to the public should always be maintained in the sense above indicated, and so far as possible nothing should be spread abroad liable to mar the harmony between the various agencies that are now co-operating, and everything tending to arouse partisan, religious, sectional, class, or race prejudice should be carefully avoided.

The method and spirit of all this work is, and it is hoped it will remain, sympathetic and not critical, helpful and not harmful. The policy intended is, if shortcomings are found or obvious improvements might be made, to suggest them privately to those interested and to avoid going before the public and, above all, to eschew newspaper exploitation. It is hoped that in this way where evils are found, as they always are in cities, that remedial agencies may be set into effective operation without besmirching the fair name of the city and without exposing any friend and helper of childhood, to censure or reproach. Already, as was indeed inevitable, many things have been unearthed which might be improved. But it is hoped that the spirit that has so far animated this work may be continued, viz.: that evils may be hidden from the view of all save those most interested in and anxious to reform them, and that the archives in which these investigations are kept may

be held strictly private and confidential, and that therefore they may safely be made thoroughgoing, exhaustive, personal and detailed. This attitude has so far commended itself to all concerned and has secured a degree of co-operation on all hands that was greater than expected and which, it is believed, is unprecedented. If churches, institutions and organizations can be made to feel that all their secrets are safe in our keeping and that, though entrusted to us, they still belong essentially to them, it is believed that the work, though it be silent and unknown, will be more efficient in bringing about the needed reforms. If all concerned can be made to feel that there is no fame but only an opportunity for service here, that there is to be no mud-slinging and also no white-washing, but that the plain, unvarnished facts are to be set down with impartiality, then only can we succeed in giving this work the scientific character that is desired. It may be added that this spirit has met with very hearty and even unexpected approbation on all sides and that it has contributed not a little to bring into line those who began fearful lest the city was to enter upon an era of exploitation and exposure, such as some surveys have thought it necessary to undertake. It is in this spirit that we have secured in this city what is believed to be rather unprecedented in others and was certainly never attained here, viz.: the hearty co-operation of all classes and conditions—Catholics, Protestants, Republicans, Democrats, and all parties and sects and nationalities, and that we have made progress in establishing confidence and removing the fear, which at first handicapped our progress, lest local partisan or religious differences were to be compared and sensibilities needlessly wounded. It is surely safe to assume that all workers for childhood earnestly desire to advance their wellbeing or they would not enter upon philanthropic endeavor. This being true, it is also safe to assume that when any worker sees a better way it will be sure to be followed. As one of the eminent Catholic leaders in the movement well said: "We are trying to get not Catholic or Protestant, Democratic or Republican milk, but clean milk, good juvenile courts, clubs, homes, etc." This is the spirit that animates our work, and it is with gratification, not to say surprise, that we look upon the favorable auspices under which the rather tentative beginnings of the first year have grown.

In carrying out these investigations, the most important factor is the energy and initiative of the individual worker. A few have dawdled and tarried with the work, magnified difficulties, returned several times a week for more explicit directions, have found or made little time for it and two have dropped out by the way. Others with no experience have gone ahead, exhausted every resource, and consulted officials so frequently

that we had to systematize and schedule such interviews, and presented reports so valuable that officials have wished copies to file and use, so that we hope we have really assisted city departments, to say nothing of institutions. Our experience suggests that, while experts can help in initial stages, their power to aid is soon transcended in the best cases. Most of them are specialists and can assist only to a certain point. Thus this work appeals to and tests native ability to devise new methods of meeting new emergencies as they arise, ingenuity to invent methods and adapt means to ends at every point. On the other hand, some have shown no tact but have aroused needless antagonisms and suspicions that were hard to allay, and which in some cases for a time seemed to block the work in specific fields or directions. Occasionally information has been withheld; but this fact had to be recorded. In general, most interested parties, heads of institutions and others, several hundred in all, have been remarkably helpful. On the whole it seems from our brief experience that success here demands a somewhat unique type of innate ability, sagacity and power of adaptation, which training can of course aid but is far from being able to create. The social worker in the field of childhood needs much born sympathy with childhood and intuitive power. This native difference seems to be greater than that between the sexes. In the various conferences of the workers that have been held from time to time, to define their several fields, to avoid duplication, and for mutual aid and encouragement, it has been noticed that the young women seemed rather more animated by the desire to help children, are more inclined to stress individual cases, and generally have more tact; while young men are more guided by the ideal of having a good thesis, and are rather more inclined to be careless of personal feelings. This difference, if it exists, however, appears to be slight; while young women often seem as ready as men to push their personal inquiries into unusual, if not in a few cases somewhat dangerous, quarters. The field work has taken both much out of doors and involved a wholesome change from academic study as well as given healthful exercise. Best of all, perhaps, as nearly all were psychologists, it has given a most wholesome practical trend to thought and enriched theory by practice, has filled the mind with manifold concrete facts and illustrations and thus tended to make all more efficient as teachers later. Several have spontaneously and independently expressed the purpose, wherever they are situated later, of inaugurating or co-operating in this work, and of thus rendering more service in the community in which they are placed. The interest and enthusiasm and the sense that they have gained personal enlargement and power has thus been nothing less

than notable. It is the belief of instructors too, that, much time as has been given to this work, the regular studies have not suffered; while some have been prone to throw themselves into it with an abandon that made it hard for them to maintain the proportions of reading and field work or to use adequately the resources that have been prepared for and urged upon them as to the best that has been done along their lines elsewhere. The latter is of course necessary for comparative purposes and as a basis for stimulating local authorities to do as well as other cities have done. The literature here is now extensive and profitable for applications of psychology. Instructors, too, have also needed to do more or less visitation as well as to devise new pedagogical ways and means not down in the books. Thus for all concerned it has been more or less pioneer, if not worthy the name of research, work. All have come into quickening touch with life as it is actually lived out by men and women of all, but especially of the poorer, classes in the community; and thus the ever-present danger of scholastic isolation has been mitigated. In not a few cases, our visitations have led to immediate personal relief from distress; and this function has added its zest. Certain organizations of vicious boys and girls have been exploited by the press in a way which tended to injure the fair name of the city, and which brought workers from a distance in at least three cases to exploit these evils for the delectation of the public. We found out the facts in these cases, which were inaccessible to both the police and the reporters and which, although bad were much less so than had been represented, and were able to do something to mitigate the evil. On the whole, while our work was at first misunderstood and sometimes feared in certain quarters, we have made marked progress in winning the confidence and support of those whose friendly co-operation was most desired and most needful; and no defects or evils, of which it was inevitable that many should be found, have been proclaimed to the general public and many have already been remedied. Thus, if the work should end this year, instead of going on as it will do with augmented resources and effectiveness, it has already justified all the expense and effort it has cost. It is also hoped that another year, besides our regular workers, the appeal for volunteers who can give a definite if limited amount of time as coadjutors here, may be secured both for their own benefit and for that of the cause.

Finally, we add below samples of a few of the representative syllabi, given to the investigators as initial suggestions and which served as a point of departure for their work.

SYLLABUS ON CHEAP THEATRES, VAUDEVILLE, MOVING-PICTURE, DIME, NICKELODEON, AND PENNY-PEEP SHOW, ARCADES, ETC., IN WORCESTER

1. Provide note-book, visit each, list with address, and describe all you see.
2. Note: How long each has been in operation.
   What hours of the day and evening it is open.
   How long each show lasts.
   Price of admission.
   Length of performance.
   Seating capacity.
   Amateur night.
   Number and character of attendance. Seasons of greatest attendance.
   Describe each exhibition you see.
3. How much are the lights turned down and how dark is it? Ventilation?
4. What proportion of boys go with girls?
5. Estimate the cost of the show; rent of films; where they come from; and any facts about dealers in them; get price- and subject-lists.
6. Estimate the gate money; profits.
7. Collect state laws and state ordinances bearing upon such shows; find out how far they are enforced.
8. Collect in a scrap-book all advertisements of these shows, whether posters or in the press. Describe what is done to call attention to them;—*e. g.*, Barkers, sandwich men, vehicles, etc.
9. Find out all about the bureau in New York that controls these films in the interests of morals.
10. Consult Juvenile Court, the head of the Boys' Club, Miss Witherspoon, perhaps later Father McCoy, the chief of police, Matthews, Judge Estey, teachers, and others.
11. Ask teachers or the president of the Boys' Club whether it is practicable to have children write their experiences with these shows, describing the best or worst representations they have seen.
12. Get teachers to revise and suggest additions or modifications of this syllabus.

School Yards:

1. Size of each and whether grass or gravel.
2. Number of children in the school and square feet per child.
3. When do these school yards open and close?
4. What school rules govern their use?
5. Is there supervision of play?
6. Length of recess and rules during it? Customs about going in and out?
7. Play apparatus in the yard?
8. Noon hour and playgrounds?
9. Flowers or gardens in the playgrounds?
10. Sheds for rainy days?
11. Are children from other schools allowed in the yard?
12. Regulations for summer? Are they opened or closed and for what hours?

Dooryards (back and front):

1. Have children of the grades in sample schools write school compositions on this subject, on the following lines:

a. Have each describe his or her own front and back yard; how the pupil uses them morning, evening, Sundays, holidays, summers, winters.

b. How many and what kind of playthings or apparatus they have; what plants, shrubs, trees; is the yard closed by a fence; what could the child do or what could be put there to make the home yard more attractive?

Seasonal uses? How many games desirable for growing children can be played in Worcester yards?

c. Barns and stables—what is in them? The child's duties toward horse, cow, sheep, hens, pigeons, turkeys, dogs, cats, or any other domestic animal? Are there any other outbuildings that the child uses?

2. What is the hygienic state and also need in these yards? should the city take ashes, garbage, etc.? Children's duties in sweeping walks, shovelling snow, etc.?

3. What tools has the child for digging? Are there stones, bricks, or blocks of wood, boards, etc., for building? If so, what is done with them?

4. What is the custom and law about the use of yards by those who dwell on the upper floors of three-deckers? The uses of woodyards, coal, kindling, back alleys, basements, etc.

5. Observe and note same points with regard to public institutions for children—orphanages, houses of refuge, etc.

Parks and Playgrounds of Worcester

1. Get or make a map of each park. History of system and cost.

2. List and describe all play apparatus (swings, teeters, bars, etc.) provided by the city; cost; date of putting in each.

3. Collect park rules and ordinances on plays, games, and all that pertains to children; hours of opening and locking up the play apparatus.

4. When and where can ball and other games be played? Regulations for coasting, skating and bathing.

5. Get copy of all park rules that are posted.

6. What animals are there, if any, and what are the rules about teasing, feeding, observing them, etc.?

7. What regulations are there about flowers, plants, and trees?

8. Seats: what kind, material, how placed with reference to privacy or exposure? When are they put out in the spring and taken in in the fall?

9. All about drinking-fountains: cups stolen; pollution; nuisances.

10. What about sheds and other protection against rain and snow? Closets?

11. List of arrests made under park regulations and in parks: causes; ages; penalties, etc., for the last five years.

12. Ditto accidents.

13. See the Park Commissioners and get information; see what literature they have collected concerning the Park System of other cities.

14. Go to Dr. Theodate Smith and Dr. Wilson in the Library for literature on the subject.

15. Describe ideal parks elsewhere, especially Chicago park system.

Holidays

Have children write compositions on:

1. What I do Saturday afternoons, evenings, Sundays, rainy days.

2. How I would like to spend Thanksgiving, Fourth of July, Christmas, New Year's, Hallowe'en, St. Patrick's Day, Labor Day, Washington's Birthday, Memorial Day.

3. In free time, what I do out of school: list of home duties; selling papers and other opportunities for earning money.

4. A routine day from rising and going to school, including after school and evening.
5. What time I arrive home after school, and how I spend all the time until school opens. How long after school closes I go home, and how the time is spent after both sessions of school.
6. Why I like to walk the streets and to go around instead of going the most direct way.

Besides the two preceding departments: A. Children's Institute, and B. Special Child Surveys in Worcester, there are two more lines of child work in the city which are not under the control of Clark University, although in sympathetic relations with it. These are the following:

C. *The Worcester Conference for Child Welfare*, President, Rufus B. Fowler, Secretary, Austin S. Garver, Chairman of the Executive Committee, Father John J. McCoy. Under the general supervision of this organization the following large committees composed of citizens and experts were appointed:

a. Health in matters predominantly affecting children.
b. Child delinquency and crime.
c. Milk.
d. Playgrounds.
e. Amusements including theatres, nickelodeons, dance-halls.
f. Publicity.

Each of these committees has held meetings, enlarged its numbers, provided public lectures by experts from various places, etc. An advisory committee of some two hundred and fifty leading citizens including the representatives of all child welfare institutions in the city, as well as the above committees, has been organized. The report of the work in this field will be made later and can be obtained by addressing the Secretary, Austin S. Garver.

D. *National Child Conference for Research and Welfare*, a fourth line of endeavor which like the third is independent of the University, organized last summer. President, Dr. G. Stanley Hall, Secretary, Dr. Henry S. Curtis. A five days' congress of fifteen sessions and nearly fifty addresses by twenty-seven child welfare societies was held, the Proceedings of which are now printed (bound in cloth, $2.00; paper $1.50; address Louis N. Wilson, Worcester, Mass.). Another conference of similar character will be held at Clark University June 28, July 2, of the present year. It is felt that this organization has great possibilities in it and that there should be municipal bureaus or departments organizing all institutions for the welfare of childhood, also State bureaus, and perhaps ultimately a national bureau.

Reports on both the above (C. & D.) will appear later.

THE TEACHING OF THE FACTS OF SEX IN THE PUBLIC SCHOOL

By Clara Schmitt, Chicago, Illinois

Among the many educational problems of the day we are coming to number the teaching of the facts and hygiene of sex. The importance of the problem becomes evident from the consideration of the evils which the neglect of sexual hygiene leads to in society. These evils arise from ignorance of the results of indulgences uncontrolled by moral and hygienic considerations and may be in large measure prevented by proper instruction. This paper will first discuss briefly the scope of these evils as they have recently been brought to light in a mass of literature through the Society of Sanitary and Moral Prophylaxis in America, the Society for Fighting Social Disease in Germany and certain independent writers. It will then discuss the problem of instruction in sexual hygiene and attempt to show that such instruction is a practicable remedy for much of the evil.

The evils of sexual perversion are concerned with four phases of social and industrial life, the hygienic, economic, moral and æsthetic.

Physicians have in recent years been disclosing the prevalence and virulence of venereal diseases. It is variously estimated that from twenty-five to seventy-five per cent. of the population is afflicted in some form. Of the German army over eighteen per cent. are affected, of the Italian army over fifty-four per cent., with the armies of other countries ranging between. It affects all classes. Of the student body of Germany twenty-five per cent. are so afflicted. Of 33,670 homeless men cared for in three years by the Municipal Lodging House of Chicago, 4,875, or ten per cent., were virulently affected.[1] Physicians of Germany estimate that measles is the only disease surpassing in frequency venereal diseases; in the United States they are prevalent to the same extent.[2] The disease affects all ages.[3] The Committee of Fifteen report

[1] Raymond Robbins: Education in Matters of Sex, Educational Phamphlet Society of Sanitary and Moral Prophylaxis.

[2] There are at present no satisfactory statistics.—Editor.

[3] For further statistics and bibliography see Henderson: Eighth Year Book of the National Society for the Scientific Study of Education, Part I.

that in New York, "A considerable portion of syphilitics treated in the hospitals are boys in their teens. Probably a majority of all sufferers from syphilis are infected before their twenty-sixth year. Of ten thousand syphilitics who came under the observation of Professor Fournier, 817 had been infected before the twentieth year, and 5,130 between twenty-one and twenty-six." Of the 3,122 children brought before the Juvenile Court of Chicago in 1908, one per cent. of the boys and twenty per cent. of the girls were suffering from venereal infection.[1]

The harm of this form of disease does not end with itself but is also the direct cause of many others. To it are due ninety per cent. of locomotor ataxia; seventy-five per cent. ocular paralysis; a large proportion of general paralysis; eighty per cent. paresis; ten to thirty per cent. blindness; and from thirty to eighty per cent. of diseases peculiar to women.[2]

Neither does its baneful effects end with the original victims, but is communicated to the well through bodily contact of the diseased parts, or with discharges of the disease in toilet rooms, drinking cups, towels, etc., and is also transmitted as a taint in the blood of the offspring and manifested in many forms of degeneration of body and mind. These diseases are spread throughout the community through prostitution.

This great amount of disease is the source of great economic waste. Every sufferer is at some time during the period of infection, which may last indefinitely, wholly or partly incapacitated for work. The burden of the blind, degenerate, and feeble minded is almost wholly due to its effects.

These facts indicate the necessity of teaching for the prevention of evils which manifest themselves largely in adult life. A further urgent reason for sexual enlightenment concerns itself with habits widely prevalent among children. While a certain per cent. of children are found suffering from the effects of precocious social vice, a great number are threatened with the results of solitary vice. The prevalence of the habit of onanism is testified to by many writers and observers.[3] Moll, in his practise as school physician, found it to exist almost universally among the school children of both sexes in Germany. The habit may be acquired in many ways, through

---

[1] This does not mean a greater prevalence of venereal diseases among girls than among boys. The statistics of the court show that girls are brought there for five crimes, boys for nine. Annual report, 1908.

[2] Morrow: Control of Syphilis and Venereal Disease, Boston Medical and Surgical Journal, Jan. 31, 1908.

[3] Hall: Adolescence.

the accidents of clothing or bodily position or through the teaching and example of comrades.[1]

Physicians are not agreed upon the physical effects of this practice. Some ascribe to it all the nervous disturbances which the body may suffer. Lately the opinion has become general that if not carried to excess the habit is not productive of physical harm. Many children recover from it voluntarily through the developments of conceptions of higher ideals of personal purity, or through absorption in the interests of work or study or athletics. Moll reports many such cases which he has watched through their development to adult life and parenthood with no observable evil results upon either themselves or their children. Among many children the secret fear of the sin of the habit which they cannot break and which may be practiced in sleep leads to serious effects, melancholia, shrinking from society, and sometimes suicide.

The habit may, however, lead to an excessive practice in itself or to prostitution. In either case the subject is a more or less unfit member of society and may be a positive menace to it. The excessive practice of the habit leads to nervous disturbances and fatigue of the whole organism. Mental and physical development are arrested in greater or less degree.

The victim of the habit of sexual perversity in any form is robbed of participation in, or appreciation of, a large realm of the æsthetic life of the period. Much of our inheritance of art and literature has for its content the purer, finer phases of romantic love. Whoever has degraded himself to a low order of sexual indulgence is robbed of the power to enjoy this phase of our artistic life, and he is also robbed of the power of assuming a frank and fine attitude toward members of the opposite sex. He may also lose the feeling of the need of the opposite sex with its consequent limitations to social activity and enjoyment.

The moral factor of our problem concerns itself with the elements of self-control and consideration for the welfare of others. To control oneself to the end that a good heredity may be passed on to one's children, or that one may be able best to fill his place in the world, or to develop one's power of enjoyment above the merely sensuous, are ideals easily developed in the mind of the young and may be made of much influence in the shaping of conduct. But such control is prevented if the youth grow up in ignorance of the relationship between immorality and disease and their hereditary effects; or if he is allowed to acquire habits in early life which are very difficult to break; or if he is allowed to adopt or tolerate the "double standard" of virtue.

---

[1] Moll: Das Sexualleben des Kindes.

The most important condition among those responsible for the evils of sex perversions is the lack of instruction of children in the facts of sex. This has for its cause the feeling of shame for the sexual life. Parents cannot speak to children concerning it without shame and embarrassment, and many consider it positively wrong to give to young children true answers to their questions concerning such events as the coming of the baby brother or sister. They fear that they will bring to the child's mind impure thoughts and images. Hence the stork myth and other stories are invented to satisfy the inquiring little mind. Höller[1] says that this false modesty has caused to develop among us another language alongside our ordinary language, one of symbols and significant smiles for the initiated when there occurs the mention of sexual topics. We have also developed a hypersensitiveness which sees significant meanings in the most innocent remarks of the naïve. We maintain, so to speak, a double attitude toward our world in which part of it is treated frankly and appreciatively, another part most necessary to its existence, with shame. Among gatherings of young people agonies of embarrassment are often caused by accidental or innocent allusions, even remotely, to sexual subjects. The writer recalls vividly such an incident at a table full of young college students and the few moments of embarrassed silence after a more frank young man had announced the birth of a little niece.

The secrecy with which sex matters are discussed by those about him and the putting off of his questions with inadequate answers arouses in the child an extreme curiosity. He then proceeds to ferret out the problem for himself. His education in this matter then comes from his more enlightened companions. From them he learns that his parents have deceived him, with a consequent loss of confidence between him and them. From them he learns only of the bare brutality of the sex act, but nothing of its meaning or end in the process of nature. Having gained his knowledge surreptitiously and in a form which would not be tolerated in conversation with older people the child develops a hypocritical attitude toward his parents and teachers and a general lasciviousness with the sharers of his knowledge. In the schools this comes to light in the form of lascivious words or phrases scrawled upon the walls of toilets or other places where the children may happen to congregate without supervision, and of occasional reports to teachers by young girls of improper conduct toward them on the part of boys. In some places, indeed, a more search-

[1] Höller: Die Sexuelle Frage und die Schule.

ing investigation discloses the prevalence of precocious social vice among larger or smaller groups of children.[1]

That much of this harm may be prevented by a course of instruction which would accustom our youth "to hearing natural things spoken of and treated in a natural way and to learn to speak of them naturally themselves"[2] is scarcely to be doubted.

Having discussed the need of sexual enlightenment the question arises, when, where, and by whom this enlightenment should be given and what it should comprise. In Germany where most attention has been paid to the subject, lectures on sexual topics are given in several universities and to graduating classes of some of the gymnasia.[3] Waiting until after the adolescent period to give this instruction is, however, beginning far too late. Interests in sexual subjects arise in the child's mind long before the awakening of the sexual life. Before this period has arrived the child may have been subject to all the dangers attendant upon ignorance. He will almost certainly have acquired the knowledge he does possess from impure sources and also our present attitude of shame toward it. This makes it then nearly impossible for the child to assume an attitude of frankness or unimpassioned scientific interest. Many teachers deal with the subject very frankly as a moral issue whenever occasions showing its need arise, but this also has the disadvantage of attempting to apply a remedy after a possibly preventable ill has been incurred.

The first childish interest in sexual matters may occur as early as five years of age and generally centres about the coming of the baby brother or sister. The questions that the child asks then should be answered truthfully and fully enough to satisfy. This method has a very gratifying effect upon the child's attitude toward the new-comer and his respect and reverence for the parents. Many fathers and mothers have contributed to the Ladies' Home Journal at times during the last three years accounts of the good results upon their children of such confidential talks. The information cannot be well given without emphasis upon the mother love, and in due time that of the father, in allowing the baby to be born. One such incident in the writer's experience may serve to indicate the good results of such a course.

The first grandchild of a large family was expected. The

---

[1] Julian W. Mack: What Every Girl Should Know, Ladies' Home Journal, May, 1908.

[2] Höller: Die Sexuelle Frage und die Schule.

[3] Kohn: The Teaching of Social Hygiene, Educational Bi-monthly, Dec., 1909.

youngest child, a little girl of twelve, who had grown up in the farm home with few companions outside of the family and those who came to the house, had never asked any questions of a sexual nature. An elder sister thought it wise to tell her of the coming event. Advantage was taken of the little girl's love for babies and her interest in a neighbor's baby to give the information in a natural way. It was rather evident, however, that the little girl was already possessed of some knowledge of which she was ashamed, but she soon became unembarrassed and asked several questions which showed that she had been thinking of the matter. The good effects of the instruction showed itself in her happiness at being allowed a frank social admission into the family's loving expectation of the coming event. Such instruction, of course, can only be expected in families of high standards, but many more are capable of a higher standard of appreciation of reproduction if it were presented. In another family in which no such instruction had ever been given by the parents the children learned that a new member was coming. They discussed the matter among themselves, looked forward eagerly to the event and even selected a name which later they insisted upon bestowing. But instinctively not a word upon the subject was said to the mother, and probably that mother will never realize the sweet companionship with her children which she missed because of her false modesty.

Since, then, the child's interest in sex questions arises early, why should not the whole thing be left with the parents? Naturally, the first questions must be answered by them. Unfortunately, however, the parents of the present generation have been brought so much under the influence of shame in reference to the sexual life that they are unable to speak to the child frankly. But granting that the first childish questions are frankly answered, parents are not necessarily teachers and do not know how to adjust in their instruction the various phases of this complex problem to the child's understanding. The parent may also have no other biological knowledge with which to correlate the facts of human regeneration.

The physician, by reason of his scientific preparation, is a much more efficient agent than the parent. Dr. Helen C. Putnam[1] in her investigation of the teaching of sexual hygiene in twenty cities of the United States found six schools in which physicians gave lectures on sexual hygiene. But the physician, too, may not have teaching ability and for other

[1] Putnam: Instruction in the Physiology and Hygiene of Sex, Boston Medical and Surgical Journal, Jan. 31, 1906.

reasons may be unable to present the long line of biological instruction which is necessary to place the subject in its natural setting in the general life process. In Germany the claim is made by the clergy that since the question is an almost wholly ethical one it should be given over to the teacher of religion. But the fact that the question is also scientific leaves any other than scientifically trained persons unable to handle it fully. Since scientific preparation is necessary, and many pedagogical considerations enter in to determine the method and form of teaching, the task naturally falls to the teacher, though the physician and religious influence may be of great influence in their own fields.

The first pedagogical consideration entering in to determine the form and material of instruction is the fact of developmental stages in the life of the child himself. With respect to sex interests we may divide the life of the child before the adult stage into two periods, the objective or scientific and the subjective or ethical. The first comprises the second period of childhood, the latter the period of adolescence.[1] In the first period the child's interest is purely scientific. The questions he asks about sex may be put in the same class with those he asks about rain and clouds and plants. He wants to know where the mother cat found her kittens and how the birds got into the nest. At this period the physiological ripening of the sex organs not yet having taken place, sexual activity cannot be aroused through suggestion, though he is likely to contract the habit of onanism. Sex topics are not accompanied with a feeling of shame in his mind except as he acquires it from his social surroundings. To learn at this time that the young are produced from the body of the mother has no different significance than to find that flowers grow on plants or that pebbles are found by the seashore. To be sure a different significance in the relationships sustained between human parentage and offspring and that found in the lower animal and plant world, must soon become apparent to him. Miss Phelps[2] tells of the roomful of school children who had a pet female rabbit and desired some little rabbits. They discussed and carried out the means of attaining their desire, and awaited the end in interested expectation. They took very tender care of the mother and great was their joy when the little ones came. Every teacher has seen children manifest the same joy when there emerges a butterfly from a long watched cocoon, or a plant cared for in the schoolroom comes to bloom.

---

[1] Moss: Die Psychologischen Grundlagen der Sexuelle Belehrung.

[2] Jessie Phelps: The Teaching of Sex in the Public School, Western Journal of Education, Dec., 1909.

In the adolescent period the great physical changes which take place cause strong mental disturbances of feeling. The interest of the child in sex matters becomes subjective, he must adjust his ethical ideals and his habits of self-control to this new possibility of action. In the first stage the emphasis in instruction should be laid upon the biological significance of reproduction, in the second it should be upon the social significance of sexual activity, its hygiene and ethical and æsthetic phases. It is in this second period that the school physician and religious influence may render greatest service.

Höller says:[1] "Though it is the social meaning of the sex life which is most important it must be founded upon and proceed from sound scientific knowledge. Its close dependence upon, and connection with, the well-being of the body makes necessary for the understanding and control of it an exact knowledge of the body. The handling of the ethical element of the question without reference to, or with neglect of, the physiological can only lead to empty phrases. To handle it outside of its setting in the universal process of life is to place it in the consciousness of the pupil in a realm apart and to surround it with a halo which opposes a natural unconstrained thinking and speaking of it. The instruction should tend to make sex characteristics of no greater importance than any other physiological or biological processes. The sexuality of man in all its processes should be only one case among many others."

Professor Höller has outlined a course of instruction admirably suited to the first stage.[2] Along with the general anatomical-physiological problem he selects for attention in the elementary teaching the following phases: (1) The preparation of the parent for the expected young, such as nest building among birds, the finding of sheltered places for bringing forth the young, the storing up of food along with the egg on the part of some insects. (2) External and internal fertilization. This should begin with observations of the higher plants. Among the animals fishes may serve as a starting point. The point is brought out that the possibility of external fertilization depends upon the absence of an egg covering. Then it is easily seen that if the egg has a special covering fertilization must take place before the development of the covering. The necessity for the monstrous number of fish eggs produced is deduced from consideration of the dangers to which the unprotected young are subject. The frog serves as a link between the two methods of fertilization—external and internal

[1] Höller: Die Sexuelle Frage und die Schule.
[2] Die Sexuelle Frage und die Schule.

—among animals. The latter method in which the male substance passes into the body of the female necessitates special sex organs. The advantage of this method is brought out in considering the greater protection afforded the egg. The special anatomy of the sex organs need not be taught in this early period. (3) The development of the egg into the embryo and the principal stages of the process. Cell division and the differentiation of organs, some of which has already been dealt with in botany, should be carried over to the study of selected types of vertebrate animals. (4) Birth, or leaving of the egg sac. The greater protection to the young by reason of the development of the embryo within the body of the mother is brought out. (5) Post embryonic development, the bringing up of the young to sexual maturity. This is the most ethically important point. The duties of the parents in the rearing should be considered here. (6) Attention is called to the danger and pain to mothers in the birth process; the source of mother love, the pains endured for the child. (7) The problem of heredity should be touched upon in observing the likeness of children to parents.

Höller calls attention to the necessity of including the special human considerations in the instruction. He says that to leave off with plant reproduction is not sufficient since the process in the plant world is passive and few outward analogies can be made with human reproduction. To leave off with reproduction in the lower animals is to leave out the possibility of the development of the ethical element. In the lower realms of life nature is prodigal of the individual, only the race is important. Then, too, Nature's methods among the animals and plants is mechanical. The individual is subject to his instincts, while in the human world the individual must regulate and control his instincts.

These are the special phases of the methods of reproduction which the child may be led to observe in the regular nature study work of the school. The completeness with which it is carried out may vary with the scope of the nature study course itself and with the laboratory equipment of the school, though little more than a microscope is necessary in the way of equipment.

The work in the nature study course should be supplemented by the physiology which should include the gross anatomy and function of the various sex organs and the related hygiene. In the earlier years the hygiene should teach the danger of manipulation of the parts, and later the special sex hygiene of adolescence. It is not necessary to wait with the later hygiene until each individual of the class has arrived at the adolescent stage. It is feared by many that if attention

be called early to the sex organs a precocious development may result. This is, however, a very remote and hypothetical danger. But however real it may be, the fact is that the child does have his attention called to the sexual parts of the body. First, it is in the same way that he gives attention to hands and ears and nose, later he learns functions and uses. The question here, then, is shall he gain the second part of his knowledge in its normal setting of other physiological knowledge gained, or secretely, abnormally and incorrectly.

Neither is it desirable that the classes should be segregated for the purpose of teaching the facts of sex. That would operate only to make it more conspicuous and create an attitude of shame and constraint. If treated in the same way it is not likely that the children will think of it with a different attitude of mind than they think of the processes of digestion and circulation.[1] In the teaching of sex hygiene it is no more necessary to go into gruesome details than it is in the teaching the hygiene of food and air. A persistent neglect of any of the laws of health may cause diseases which we do not find it necessary to describe in order to impress the sense of their danger.

The teaching during the high school period of the special ethical considerations of the sex life can scarcely be accomplished until we have prepared courses for the teaching of general ethics. Sexual ethics is only one of the many ethical problems of life and cannot be considered apart from them. At present the ethical problems of sex can only be considered incidentally with physiology.

The greatest difficulties in the way of instituting such a course of instruction are the objections of parents and the common attitude of shame on the part of teachers. Teachers will find, however, that with unimpassioned study of the subject their embarrassment before it will vanish. Children of high school grade betray great embarrassment at first mention of the subject by the teacher, but they very soon come to accept the frank attitude of the teacher and are glad to discuss its problems. The writer's experience with high school girls in the gymnasium, where talks on sexual hygiene and a more or less personal knowledge of sexual cycles, etc., is necessary for the safety of the gymnastic work, has shown that girls come to feel a great gratitude for the opportunity

[1] It would probably not be wise in view of the present state of public opinion to attempt instruction with mixed classes of children already enlightened in the usual way. There would be less objection if begun tactfully with young unspoiled children. The children themselves would not be shocked and so would not carry that attitude home with them to the parents.

for frank discussion. One incident out of several with such attempts among high school boys may be given. In the high school of a small town the teacher in charge of a group of freshman and sophomore boys learned that some of them were congregating at night in the back of a store and listening to the questionable stories of some older men. The boys were taken into a separate classroom and for one period each day for a week were given some lessons on regeneration in the biological world. This was given that they might be led to see the universality of the principle. And at last some talks on the need and necessity of personal purity were given. The organization of the school work prevented a further treatment of the subject. The sequel, however, came some weeks later. One boy of the class had not profited by the instruction and complaints came of his having written lewd notes and shown obscene pictures to the girls. The teacher was unable to influence the boy, and talked to his companions about it, frankly admitting to them her inability to get James to see the wrong of his acts. The boys said they would make him stop it and did so through threats of ostracism from their baseball club.

We can hardly hope that any course of instruction will eradicate all the ills, or do it very quickly. But knowledge of evil results along with the development of higher ethical ideals will certainly operate to save many who would otherwise succumb to tempatation. And the way for the work must be very tactfully prepared, that public prejudice be not encountered. Dr. Putnam found thirty schools in which the facts of regeneration up to man were taught to elementary grades with the nature study. A beginning of this sort forms a very good foundation for further work. At the same time it should be included in the biological work of the normal schools and colleges. Every normal school student who expects to teach in the elementary school should have at least a year of work in biology and a year of human physiology. The physiology should include the anatomy, physiology, and hygiene of the sexual organs. If the facts of sex are to be treated in proportion to their importance in the physical and social life and growth of the human being much more time must be given to that part of physiology than to other portions. The sex organs undergo radicalc hanges in their character and functioning during the life of the individual. The two most important periods in the life history of the individual are conditioned upon these changes in the sex organs. Since one of these changes occurs during school life the physiology and psychology of adolescence is of great importance to the teacher, and should be included in the physiology and psychology of the normal school.

We can expect of such teaching in the schools the development of a wiser generation of parents who will be able to take upon themselves a part of the work of instructing their children in the same subject. The moral attitude of the parents of the future will be changed from that of false shame toward the most necessary of human functions to an appreciation of its sacredness and beauty when controlled in the interests of the future generation.[1]

Ferdinand Kemsies says of such teaching in the school,[2] "The enlightening word should not be dry and uninteresting, purely scientific and hygienic. It should be bound up with a larger intellectual sphere and may contain a personal note. The origin and reproduction of life upon our planet is connected with organic processes which have a relation to our intellectual and moral religious life. The stream of life which flows through time and space, its waves made up of individuals, families and peoples, charms our meditations, carries us on in wonder. Its aspect, like the contemplation of the starry heavens, arouses in us earnest religious thoughts, solemn moods, and ethical impulse. Reproduction and heredity appear as mysterious and wonderful means of feeding this stream, of maintaining it ever pure and fresh, of keeping youthful its material and yet ever spiritual and ethical. The mother with her bodily and spiritual relation to reproduction is ordained in the regenerative process as the protector and teacher of all the tender emotions with which man is endowed. Through the maternal instincts one generation is linked to the following and passes on to it the holiest experiences of the human heart, love, sympathy, and pity. The egotism of the individual is repressed through the sexual needs and instincts. Through such teaching the child is led to conceive of himself as a natural and moral link in the chain of the generations."

Selected Bibliography

Henderson, Charles R. The Eighth Year Book of the National Society for the Scientific Study of Education. University of Chicago Press, 1909.

---

[1] Moll discusses the social significance of shame in Das Sexualleben des Kindes. Shame and disgust of any kind, he maintains, are not instincts but the effect upon the individual of the general social attitude. The things which are considered shameful at one time may not be so considered at a later period. A disgusting form of food with one people may be a delicacy with another. In America the sexes mingle without shame upon the bathing beaches, while in Germany it is considered highly improper.

[2] Kemsies: Die Sexuelle Aufklärung der Jugend. Zeitschrift für Pädagogische Psychologie, Vol. 8, p. 125.

Educational Pamphlets of the American Society of Sanitary and Moral Prophylaxis. Order of Dr. E. L. Keyes, Jr., 109 E. 34th St., New York.

HÖLLER KONRAD. Die Sexuelle Frage und die Schule. Verlag von Erwin Nägele, Leipzig.

MOLL, ALBERT. Die Sexuelle Erziehung. Zeitschrift für Pädagogische Psychologie, Dec., 1908.

PUTNAM, HELEN C. Instruction in the Physiology and Hygiene of Sex. Boston Medical and Surgical Journal, Jan. 31, 1906.

THE CONTENTS OF CHILDREN'S MINDS

By WALTER LIBBY, PH. D., Northwestern University, and MISS HELEN COWLES, MISS P. S. GREENE, MR. J. H. NORRIS, MR. T. A. O'FARRELL, and MR. C. D. LOWRY.

Before recording the results of our investigations into the contents of children's minds, we must devote a little space to the earlier studies in this field, contenting ourselves with a particularly brief comment on the method and scope of the first three or four studies, whose history has already been set down in English.[1]

The first investigation of the contents of children's minds of which we have a published account was begun at Berlin in 1870, and put on record by Bartholomäi in the following year. The young children, just entering on their studies, were simply asked, in 84 of the city schools, about certain ideas: "Did you ever see a hare?" "Do you know what a mountain is?" Some seventy-five such ideas were made use of. The questioning was rather loosely carried on without strict uniformity of method, and the results from 13 of the schools had to be put aside in making the final record.

In 1879 Dr. Karl Lange examined 500 elementary pupils of the city schools of Plauen, and 300 children of 21 village schools of the vicinity. His method was to ask such questions as: "Who has seen the sun rise?" "Who has ever been at church?" He hoped to discover the presence of groups of ideas that would serve as apperception centres in the school work of the first and second years. The object of the Berlin investigation had been rather to discover deficiencies in the child's experience that might be made good by object lessons and other means.

In the investigation begun by Stanley Hall at Boston, in 1880, and continued for several years, 162 objects and ideas were made use of in questioning the children in the first grade of the elementary school. The method of asking the questions was a notable advance on that previously used by German investigators. The pupils were examined three at a time by tactful and well-trained teachers, who strove after uniformity of procedure. They were not content with one question on each idea, but they sought by cross-questions to arrive at a real knowledge of the contents of each child's mind.

[1] G. Stanley Hall: The Contents of Children's Minds, *Pedagogical Seminary*, 1900.

About the same time (1880-1884) Hartmann was carrying on his researches at Annaberg. Children ranging from five years and nine months to six years and nine months, 660 boys and 652 girls in all, were required to answer 100 questions. The examination was held by the teachers under the direction of Hartmann. An attempt was made to have the questions cover certain groups of ideas, such as plants, animals, divisions of time, etc.

Two more recent investigations remain to be mentioned. Seyffert, in his researches in Zwickau in 1893 and 1894, made use of a new method. Instead of asking the children whether they knew this or that, he presented various matters for their observation and asked for the names. The children at least know what they are able to name, though the knowledge revealed by the act of naming is not identical with the knowledge shown through other methods of investigation. The examination was conducted with an effort at uniformity by 13 teachers under Seyffert's direction. The children were taken four at a time to the number of 156. The complete answers were written down. First of all the children were questioned on the parts and contents of a home,—the walls, the ceiling, the floor, the furniture, heating apparatus, windows, and so forth. Then they were taken out and shown a meadow, a flower, a brook, a bridge, a road, and other such objects. In the third place they were questioned about plants and animals as shown in pictures. Finally the children were questioned concerning such domestic matters as the father's calling, the mother, brothers and sisters, toys, meals, punishments, and rewards. It was found that domestic life furnishes little children with their largest stock of definite ideas. Less power was displayed in naming the things represented in pictures than in naming things actually shown. So strong a tendency was noticeable to name the unknown from the known that a doubt is raised as to the wisdom of emphasizing the old elements in the new. The accuracy of the observation was found by Seyffert to depend on the extent to which the child had used the objects to be named. Moreover, those things that had been regarded with interest were likely to be named correctly, especially those things that concerned the safety of the child. What causes pain seems more likely to be known than what causes pleasure. Finally, it might be mentioned that Seyffert, as Hartmann had done before him, continued to watch the development of the pupils examined. It was found that those who had a poor stock of ideas on entering school, showed correspondingly poor progress later.[1]

[1] Seyffert, Rich.: Beobachtungen an Neulingen. Deutsche Schulpraxis, XIII, 1893 u. XIV, 1894.

Finally in 1903 and 1904 Drs. Engelsperger and Ziegler, two public school teachers in Munich, undertook at the suggestion of Meumann, an investigation of the contents of children's minds on entering school.[1] Their method differed from that of previous investigators in making child-psychology, rather than pedagogy, the starting point. The value of the results in guiding the earliest school work was considered merely of secondary importance, and the research was to be from the psychological standpoint, unembarrassed by pedagogical interests. The children, 100 boys and 100 girls, were chosen with regard to the social condition of their parents. They were examined one at a time, uniformity of procedure being assured by the two investigators doing the work themselves. The questioning was adapted to the understanding and peculiarities of the children, and took the form of conversation with one pupil at a time. The ideas in reference to which they were questioned were divided into groups, and each of these groups of ideas was submitted to all the children to be examined in all the schools before another group was considered. This assured a greater uniformity of conditions than would have resulted if all the questions were submitted at one school before beginning the investigation at another. A careful record was kept of the answers, both the correct and the incorrect.

It will be observed that the six investigations reviewed above chose each as its subject the contents of children's minds on entering school. It occurred to the writer to extend this style of study to children who had not entered school, to others who on account of their social conditions had lacked the advantages of home training, to others again who had entered high school, and finally to a group of white and colored children found in the schools of Illinois. The special scope and purpose of each of these studies will appear presently.

I. Contents of the Mind of a Five-Year Old Boy

The first of the following researches will help us to answer the oft repeated question: What can be done by a cultured mother to educate a child as a preliminary to school education? It forms a counterpart to the account by C. H. Bean, in a recent number of the Psychological Clinic,[2] of the effects of neglect in the home during the first six years of life. Some attempt was also made, as will be seen, to show the difference between the contents of the mind of a child of favorable family environment and those of children in an orphanage.

---

[1] Meumann, Ernst: Vorlesungen zur Einführung in die experimentelle Pädagogik, Leipzig, 1907. Chap. V, Vol. I.

[2] C. H. Bean: The Psychological Clinic, May, 1909.

The subject of the following inquiry, carried on, and reported, by one of my students,[1] was a little boy of five years and nine months. He is the youngest of six children, the next older being a boy of eight. He plays a great deal with children younger and older, but has never been to the grade school. At the time he was questioned, he had been attending kindergarten for about three and a half months. He is strong and healthy, a little tall for his age, quite talkative, but not precocious. He cannot read or write, but can copy writing or printing so well that many people have been "taken in" by it. He is also very good at drawing, and, although left-handed, is in general very ingenious in working with his hands, perhaps because he has been so much with his older brother and has "followed his lead." He hears the older children discuss their school-work, and also hears politics, athletics, etc., discussed at home. The older children read to him, and his father is fond of asking him questions and of giving him problems in mental arithmetic.

What is your name? (Correctly answered.)

What is your father's name? (Correctly answered.)

What is your father's business? "Selling newspapers." (His father is publisher of a paper.)

What shape is the earth? "Round like an orange. It turns around,—rolls like a ball. China is on the other side. I don't see how we stay on top all the time, if the earth rolls. How do we?"

Name all the birds you know and can recognize. "Bluejay, robin, blackbird, sparrow, red-headed woodpecker, flicker, crow, pigeon, red-breasted grosbeak." (He can recognize more than that number.)

Name all the animals you can. "Elephant, tiger, lion, leopard, monkey, camel, deer, bear, beaver, squirrel, rabbit, guinea-pig, pony, horse, pig, cow, dog, cat, chicken, badger, fox."

Is a chicken an animal? Isn't it a bird? "Of course not. It can't fly."

Of what is bread made? "Dough."

Of what is dough made? "Oh, sugar and milk. Lots of things. I think the baker makes it."

What do you want to be when you grow up? "A fire-chief or a motorman."

Don't you want to be a newspaper man like your father? "No, I'd rather be a fire-chief. Then I could go to all the fires I wanted to. Ask me some more like that."

What is your favorite animal? "The elephant is my favorite animal, because it is the biggest. I would rather have an elephant than anything else if I had a place to keep it. More children could ride on an elephant than on a pony."

---

[1] Miss Helen Cowles.

Where does bacon come from? "We get bacon from the pig."

Where do pork-chops come from? "From the cow, I think."

Where does beef-steak come from? "From the cow or the horse, I can't remember which."

Where do we get milk? "From the cow, of course. The sheep gives milk, too."

What country do you live in? "Des Moines."

What state? "The United States of America."

Who is president of the United States? "Taft."

Who was president before Taft? "Roosevelt."

Where does Taft live? "In Washington. I haven't seen him, but John has."

Who is the governor of Iowa? "Mr. Cummins."

How many wheels are there on a street-car? "Eight."

How many wheels are there on a wheel-barrow? "One."

How many nickels are there in a dime? "Two."

How many pennies are there in a dime? "Ten."

How many pennies are there in a dollar? "A hundred."

How many pennies are there in ten dollars? "Ten hundred."

How many quarters are there in a dollar? "Four."

How many nickels are there in a dollar? "I don't know."

Where does coal come from? "From the ground. In the mines."

How does it get in the ground? "It has always been there."

How do you know it has always been there? "It is just like the stones, only the dirt makes it black. No, I think coal is just hard mud, because stones won't burn. I *think* hard mud would burn. I'll ask father and tell you."

What are your shoes made of? "Leather off a sheep."

What is your favorite game? "Skip and tag."

Name the colors that you know? "Blue, green, pink, red, orange, lavender, purple, yellow."

What is the sun made of? "It is a big ball of fire."

How big is it? "Bigger than this world."

How big is the moon? "Like a great big orange. Not so big as the sun or the earth. About as big as the house, I guess."

When you fall, why do you fall down instead of up? "You are so heavy, you just *naturally* fall down."

What is your suit made of? "Thread."

What is thread made of? "I don't know. I think it grows on some kind of a bush."

Name some people that the Bible tells about. "Cain, Abel, Moses, Goliath, Daniel, Jesus and the angels."

Who was Abraham Lincoln? "A president."

Is he alive now? "No, in heaven."

Was he a bad or a good man? "Good. He never told a lie."

What did he do that was good? "Once he kept a store and a lady gave him six cents too much and he walked seven miles to give it back to the lady. He lived in Washington."

Who discovered America? "George Washington."

Point north, east, south, west. (Correctly done.)

What makes it light in the daytime and dark at night? "The sun makes it light in the daytime. Then the clouds come over it at night and make it dark."

Why do the clouds come over it at the same time every night? "To show us it is time to go to bed."

What are eyebrows for? "To make us look pretty."

Why do we have a Christmas every year? "Because it is Jesus's birthday."

Why do we have Easter? "So that the children can have Easter eggs."

I intended to ask some five-year old children at the Lake Bluff (Illinois) Orphanage this same list of questions, and accordingly asked for several fairly bright ones of that age. They were said to be "about six" (their ages were not known exactly)—two boys and two girls. They seemed to me younger than the other child. After I had become acquainted with them, I tried to question them, but they either would not reply at all or talked hard and fast upon some other subject. The other child had always answered the question I asked him. If he did not know, he seemed to make up the best answer he could. He did not talk upon other subjects.

The orphanage children all knew their names, and the name of the place—Lake Bluff. A few knew where they had lived before, but seemed to have absolutely no idea of location. They were all kindergarten children and knew all the colors *very* well. When asked what birds or what flowers they knew, all said, "Little blue ones," "Little pink ones," etc., instead of giving names. They knew a great many songs and recitations and liked to give them. Both boys wished to be storekeepers when they grew up. One little girl wanted to "be a lady that takes care of little children," and the other wanted to "ride on the train."

Probably I did not see enough of them to become so acquainted that they would talk freely. They seemed to know absolutely nothing of the world outside the orphanage. To such questions as, "Where does coal come from?" they would all say, "The man brings it," or some other similar answer.

I think the first little boy is an average normal child, and that the contents of the minds of the orphanage children were decidedly below the average. The investigation showed me more than ever the importance of home-training and environ-

ment, and especially the influence in the house of older children with active brains and lively interests. The child whom I questioned has an observing mother who always points out to him the parts of a flower, the birds, the different trees, the uses of machinery, and encourages him to use his hands in all sorts of ways. He can draw a steam engine and not leave out a single necessary part. In his drawings he shows that he knows such things as the number of toes each animal has. He scorns any one who does not know the difference between a camel and a dromedary. He seems to know little about history or geography, however; and the books he hears read are of the simplest kinds. He is a veritable question-box, and asks about *everything*. The question method seemed to appeal to him.

II. Contents of the Minds of Children in an Orphanage [1]

The first part of my study was conducted by means of a question list chosen from all those investigations mentioned in the article by Stanley Hall already referred to, with alterations to fit the surroundings of the pupils at Lake Bluff Orphanage. I asked them of twelve children from three to seven years of age. I have compared the percentage of correct answers with those Hall has recorded for sixty-four kindergarten children from the poorer homes. The results are decidedly unfavorable for the orphanage children.

Objects questioned on	Number of correct answers	% C. A.	Hall's % C. A.
Violet	8	67	
Dog-tooth violet	1	8	
Sunrise	2	17	47
Sunset	2	17	71
Triangle	3	25	
Square	8	67	
Circle	10	83	
Snail	5	42	57
Squirrel	11	92	74
Oak	4	33	
Plow	5	42	
Moss	4	33	
Rabbit	11	92	
Sleet or hail	3	25	47
Lake	12	100	
Willow	4	33	
Numbers 1-10	9	75	
Storm	8	83	

[1] This second study is the work of Miss P. S. Greene.

Objects questioned on	Number of correct answers	% C. A.	Hall's % C. A.
Pig	11	92	78
Chicken	12	100	78
Worm	11	92	91
Cow	11	92	90
Wheat	1	8	68
Clover	7	58	71
Strawberries growing	5	42	
Beans growing	3	25	
Planting seed	6	50	
Roses growing	5	42	67
Dandelion	8	67	69
Apples growing	6	50	95
Location of ribs	1	8	32
lungs	3	25	
heart	11	92	
wrist	11	92	81
ankle	6	50	62
waist	10	83	64
knuckles	5	42	77
hips	3	25	76
elbows	10	83	88
right and left	8	67	96
cheeks	10	83	96
throat	8	67	86
Seasons	9	75	59
Rainbow	8	67	62
Clouds	10	83	
Stars	11	92	93
Moon	12	100	
Green	11	92	
Blue	12	100	
Yellow	11	92	
Red	12	100	
Shape of world	5	42	
Bath	12	100	
Butter, source of	3	25	
Meat, source of	4	33	
Sky	11	92	
Frog	9	75	65
Fish	11	92	
Butterfly	10	83	
Birch	3	25	
Pine	7	58	
Cornfield	4	33	68
Potato-patch	6	50	64
Woods	9	75	73
Bread, source of	7	58	
Carpenter at work	4	33	
Mason at work	1	8	
Shoemaker at work	5	42	
Honey, source of	4	33	
Beehive	6	50	
Ant	11	92	
Crow	5	42	

Objects questioned on	Number of correct answers	% C. A.	Hall's % C. A.
Bluebird	9	75	
Robin	11	92	71
Sparrow	8	67	
God	8	67	
Jesus	7	58	
Recite or sing stanza	12	100	
Daniel	3	25	
David	3	25	
Shepherd	6	50	
Sheep	9	75	
Dew	1	8	
Easter, why celebrate	1	8	
Christmas, why celebrate	1	8	
Fourth of July	0	0	

In the second part of this study a list of fourteen questions as to tastes, ambitions, etc., were sent to the third, fourth, and fifth grades of the orphanage school. Some of these returns throw light on the range of ideas in the minds of the children. For example, in answer to the question: What is particularly wicked? three boys of ten years, and one of eleven, said, "to swear," one of twelve "to be a sneak," one of eleven "to lie," one of twelve "to drink beer," one of ten "to steal," one of twelve "to get a spanking," and two boys of ten select boys of their acquaintance as particularly wicked. Nine mentioned killing or some other form of cruelty. Similarly of the girls, four mentioned killing birds, two, swearing, two, drinking, two, a spanking, two, bad men, and one, each of the following: harming good people, drunkards deserting or killing their families, unjust punishment of innocent, a robber, stealing, cruelty to animals, fighting, drinking. Except in three or four cases there is evidently a clearly defined conception of wickedness. However, the results of the second part of this experiment will be treated more fully elsewhere.

III. Contents of the Minds of First-Year High School Pupils[1]

A list of about 80 questions was carefully made out and 500 copies printed. The papers were sent to the following high schools in the State of Illinois: Rockford, East Aurora, West Aurora, Elgin, Batavia, and Oswego. The questions were submitted to the first year pupils of each school in order to obtain some idea of the everyday or working knowledge of the average child on entering the high school. Consequently

[1] This study was planned and carried out by Mr. J. H. Norris.

questions relating particularly to school subjects were purposely avoided, and those covering as many subjects taught by experience, hearsay, observation, and so forth, as possible, were included. Scope of knowledge rather than thoroughness in any one subject was the guiding motive in the selection of the questions. Since the papers were to be submitted to both boys and girls, besides the majority of general questions a few were included that would be of interest to only one sex.

During the filling out of the papers in the different schools, no pupil was allowed to leave his seat, or to hold communication with any person. The length of time allowed was from thirty to forty-five minutes. At the end of this time, all the papers that had at least one question answered, were collected and returned to the investigator. The total number of papers received was four hundred and eight; of this number two hundred and eleven were filled out by girls, and one hundred and ninety-seven by boys. From Table I a fair idea may be obtained of the ages of the pupils. Of course it must be remembered that the papers were filled out the latter part of April. In order to obtain the age at entering high school, seven and a half or eight months must be subtracted from the ages given here.

TABLE I

Number of pupils	Ages		
	Minimum	Maximum	Average
Boys 197	12 yrs. 2 ms.	18 yrs. 2 ms.	15 yrs. 1 mo.
Girls 211	12 yrs. 11 ms.	18 yrs. 3 ms.	15 yrs. 2 ms.

Of the total number of boys, 22 lived in the country and the remainder in the city; of the girls, 16 in the country and the remainder in the city. For the sake of comparison, the answers of the city and of the country children are kept separate in all the following tables. Furthermore, to avoid confusion, it was deemed advisable to express all numbers in percentage form, instead of giving the actual figures in each case.

Taken all in all, the papers were fairly well answered, and in most cases as conscientiously as could be expected of boys and girls of high school age. The pupils are at least wide-awake, and they generally have an answer for everything. Whether all are as observing as might be expected it is difficult to say, but no paper was handed in that was made out by a stupid boy or girl. The answer papers, to me, seem to show that the average boy or girl in the first year of the high school has rather more knowledge than is generally supposed. The pupil's knowledge makes up in scope what it lacks in accuracy.

TABLE II

Questions		BOYS		GIRLS	
		City	Country	City	Country
Have you ever ridden on a train?	Yes	98	87	98	99
	No	2	13	2	1
Name city farthest from home you have visited	0—10—miles	5	12	2	11
	10—200 miles	74	55	58	40
	200— miles	20	11	21	25
	not stated	1	22	19	0
Where do you generally spend your vacation?	City	58	21	52	38
	Country	42	79	48	62
Do you know how to row a boat?	Yes	87	76	40	30
	No	11	24	56	70
	Not stated	2	0	4	0
Do you know how to swim?	Yes	81	94	10	18
	No	19	6	88	82
	Not stated	0	0	2	0
Do you know how to play baseball?	Yes	98	100	16	42
	No	2	0	82	58
	Not stated	0	0	2	0
Do you know how to play tennis?	Yes	25	36	31	36
	No	73	63	67	64
	Not stated	2	1	2	0
What kind of books do you like best?	Fiction	14	32	34	48
	Historical	11	12	14	0
	Children's	2	4	8	18

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
What kind of books do you like best?	Adventures	47	19	2	3
	Miscellaneous	16	21	27	13
	Not stated	10	12	15	18
What is your favorite pastime in summer?	Outdoor games	60	56	16	18
	Reading	1	0	20	18
	Picnics and camping	30	28	18	30
	Walking, riding, driving	4	0	14	11
	Visiting	0	0	4	5
	Working (boys), sewing (girls)	3	8	3	0
	Music	0	0	0	6
	Miscellaneous	0	4	11	0
	Not stated	2	4	14	12
What is your favorite pastime in winter?	Indoor games	6	0	3	0
	Skating and coasting	81	86	59	83
	Reading	4	0	14	0
	Parties	2	0	2	0
	Music	2	0	4	6
	Working (boys), sewing (girls)	1	0	2	5
	Study	0	3	3	0
	Miscellaneous	1	11	4	0
	Not stated	3	0	11	6
What animal is man's best friend?	Dog	50	32	38	25
	Horse	42	64	43	51
	Not stated	8	4	19	24

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
For what do the following abbreviations stand?					
Dr.	Right	99	100	100	100
	Not stated	1			
A. M.	Right	92	85	90	88
	Wrong	2	4	2	6
	Not stated	5	11	8	6
A. D.	Right	87	92	90	100
	Wrong	7	4	2	
	Not stated	6	4	8	
B. C.	Right	95	96	93	100
	Wrong	2	0	1	
	Not stated	3	4	6	
Inst.	Right	16	17	11	18
	Wrong	59	43	47	16
	Not stated	25	40	42	66
For how many years was Roosevelt President of the United States?	4 years	5	8	11	6
	5 years	2	0	2	6
	6 years	8	20	8	0
	7 years	68	48	46	42
	8 years	15	24	28	46
	Not stated	2	0	5	0

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
Who is Secretary of State?	Right	9	11	8	6
	Wrong	13	32	16	6
	Not stated	78	56	76	88
Who was Frances Willard?	Right	10	20	11	18
	Wrong	11	5	16	12
	Not stated	79	75	73	70
Who was Louisa May Alcott?	Right	62	60	81	76
	Wrong	3	4	3	6
	Not stated	35	36	16	18
Of what nationality was Jesus?	Right	87	76	85	76
	Wrong	2	4	4	0
	Not stated	11	20	11	24
In what year was Pres. McKinley shot?	1899	4	0	2	0
	1900	6	8	8	6
	1901	66	52	49	58
	1902	10	8	15	18
	1903	5	8	3	0
	Not stated	9	24	23	18
How many years is it since Jesus was born?	Below 1909	8	4	7	12
	1909	69	80	66	70
	1912	1	0	1	0
	1913	2	12	1	6
	Over 1913	5	0	5	0
	Not stated	15	4	20	12

TABLE II—*Cont.*

		BOYS		GIRLS	
		City	Country	City	Country
Is one ever justified in telling a falsehood?	Yes	20	36	16	36
	No	79	64	76	46
	Not stated	1	0	8	18
Do you believe that it is morally right for a divorced man or woman to marry again?	Yes	24	28	18	24
	No	71	72	76	70
	Not stated	5	0	6	6
What do you consider the worst crime a person could commit?	Murder	86	88	84	88
	Treason	3	4	1	0
	Stealing	1	0	1	6
	Suicide	2	0	4	0
	Kidnapping	1	0	1	0
	Torture	1	0	2	0
	Lying	2	8	3	0
	Hanging	1	0	1	0
	Not stated	3	0	3	6
In what kind of place do you find the following?					
Violets	Right	93	96	94	85
	Wrong	3	0	3	15
	Not stated	4	4	3	0
Golden-rod	Right	84	84	74	78
	Wrong	5	4	13	22
	Not stated	11	12	13	0

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
In what kind of place do you find the following?					
Buttercups	Right	81	80	73	58
	Wrong	4	8	15	18
	Not stated	15	12	12	24
Gophers	Right	84	92	61	70
	Wrong	5	0	7	24
	Not stated	11	8	32	6
Musk-rats	Right	89	96	57	58
	Wrong	1	0	3	18
	Not stated	10	4	40	24
Rabbits	Right	92	100	75	70
	Wrong	0		0	6
	Not stated	8		25	24
Bass	Right	93	88	22	18
	Wrong	1	4	2	6
	Not stated	6	8	76	76
Bull-heads	Right	90	96	20	12
	Wrong	1	0	2	6
	Not stated	9	4	78	82
Frogs	Right	97	100	77	88
	Wrong	0		0	6
	Not stated	3		23	6

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
In what kind of place do you find the following?					
Brown thrush	Right	60	80	12	28
	Wrong	19	12	28	24
	Not stated	21	8	60	48
Robin	Right	90	100	77	88
	Wrong	0		1	0
	Not stated	10		22	12
Meadow-lark	Right	87	96	78	94
	Wrong	1	0	3	0
	Not stated	12	4	19	6
Woodpecker	Right	91	96	74	100
	Wrong	0	0	0	
	Not stated	9	4	26	
Quail	Right	74	88	25	46
	Wrong	2	0	10	18
	Not stated	24	12	65	36
Can you tell an oak tree from an elm tree?	Yes	97	100	98	82
	No	2		1	18
	Not stated	1		1	0
Can you tell a hard maple from a soft maple?	Yes	75	68	69	52
	No	22	32	27	48
	Not stated	3	0	4	0

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
What is peculiar about the way peanuts grow?	Right	3	8	4	12
	Wrong	62	80	59	42
	Not stated	35	12	37	46
Do you understand how a steam engine works?	Yes	75	64	13	18
	No	22	36	81	82
	Not stated	3	0	6	0
Do you understand how a gasoline engine works?	Yes	66	84	13	18
	No	31	16	79	76
	Not stated	3	0	8	6
How many wheels has an ordinary railroad car?	Four	10	16	51	24
	Six	3	8	9	12
	Eight	79	60	22	30
	Twelve	4	4	1	0
	Over twelve	3	12	2	6
	Not stated	1	0	15	28
How many times does an ordinary revolver shoot without reloading?	Four and below	0	4	16	24
	Five	21	16	8	6
	Six	62	68	19	30
	Seven	12	8	2	0
	Eight	4	4	5	6
	Not stated	1	0	50	34
What is the distance between the rails of a railroad track?	Three feet	10	12	16	6
	Four feet	53	28	24	24
	Four feet 8 in.	2	0	1	0

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
What is the distance between the rails of a railroad track?	Five feet	20	20	13	0
	Six feet	4	0	3	12
	Not stated	11	40	43	58
What is echo?	Reflection of sound	56	24	38	48
	Distant sound	5	12	7	6
	Answer of voice	18	28	2	0
	Hollow space	2	0	3	0
	Miscellaneous	2	4	10	18
	Not stated	17	32	40	28
What causes thunder?	Lightning	47	28	11	24
	Clouds bumping	21	20	19	18
	Electricity	7	8	5	6
	Friction and Heat	6	4	6	0
	Miscellaneous	1	4	7	0
	Not stated	18	36	52	52
What is coal?	Mineral	34	24	18	12
	Rock	12	8	4	18
	Petrified vegetable matter	7	12	4	6
	Decayed vegetable matter	17	16	15	12
	Correct	14	8	3	12
	Not stated	16	32	56	40
What is coke?	Mineral	1	4	2	6
	Rock	1	0	1	6
	Burned coal	9	28	8	18

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
What is coke?	Miscellaneous	0	0	12	6
	Correct	59	36	19	18
	Not stated	30	32	58	46
How often do we have a full moon?	Once a year	1	8	0	6
	Once in 3 months	5	8	7	0
	Every 2 weeks	5	4	1	0
	Once a week	2	0	2	0
	Once a month	47	64	66	70
	Not stated	40	16	24	24
From what is paper made?	Right	95	96	88	89
	Wrong	0	0	0	0
	Not stated	5	4	12	11
From what is leather made?	Right	91	88	79	82
	Wrong	2	0	0	0
	Not stated	7	12	21	18
From what is silk made?	Right	94	92	90	94
	Wrong	0	0	2	0
	Not stated	6	8	8	6
From what do we get wool?	Sheep	96	100	92	100
	Cotton	0	0	1	0
	Not stated	4		7	
From what do we get linen?	Plant	1	0	4	0
	Flax	57	72	76	64

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
From what do we get linen?	Cotton or wool	0	4	1	0
	Not stated	42	24	19	36
From what is rubber made?	Rubber tree	86	76	70	58
	Wrong	2	12	1	12
	Not stated	12	12	29	30
From what is glass made?	Right	58	68	29	54
	Wrong	1	8	4	6
	Not stated	41	24	67	40
From what animal do we get the following?					
Venison	Deer	92	96	90	92
	Miscellaneous	5	0	3	4
	Not stated	3	4	7	4
Veal	Calf	68	88	56	52
	Sheep	17	12	21	20
	Miscellaneous	7	0	10	16
	Not stated	8	0	13	12
Pork	Pig	98	100	96	100
	Not stated	2		4	
Ham	Pig	84	96	72	82
	Cow	9	4	12	12
	Not stated	7	0	16	6

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
Mutton	Sheep	94	96	85	88
	Calf	1	4	1	6
	Deer	0	0	0	6
	Cow	2	0	3	0
	Goat	0	0	2	0
	Not stated	3	0	9	0
From what do we get sugar?	Sugar cane	55	36	63	36
	Sugar beet	4	8	5	12
	Cane and beet	33	52	20	24
	Plants	2	0	3	0
	Corn	1	0	1	6
	Not stated	5	4	8	22
From what do we get vinegar?	Right	74	84	69	82
	Wrong	2	4	0	6
	Not stated	24	12	31	12
When do we use baking powder, and when soda, in making cakes?	Right	2	4	13	18
	Wrong	7	8	4	12
	Not stated	91	88	83	70
Why do we put yeast in bread?	Right	89	96	87	94
	Wrong	0	0	1	0
	Not stated	11	4	12	6
Why is bluing put in the water in rinsing clothes?	Right	52	64	78	70
	Wrong	12	16	4	6
	Not stated	36	20	18	24

TABLE II—*Cont.*

Questions		BOYS		GIRLS	
		City	Country	City	Country
How far is it from this city, where you are writing, to Chicago?	Low estimate	4	0	10	24
	Close estimate	14	20	16	6
	Correct	62	52	49	18
	High	15	28	17	24
	Unreasonably high	1	0	1	6
	Not stated	4	0	7	22
When will the next presidential election occur?	Before 1911	2	0	1	6
	1911	3	0	1	0
	1912	69	72	51	36
	1913	18	20	32	42
	After 1913	0	4	3	12
	Not stated	8	4	12	4
How long does it take to go from Chicago to New York City by train?	Less than 18 hours	20	4	6	24
	18 hours	35	48	10	12
	24 hours	6	12	15	6
	36 hours	0	4	9	12
	48 hours	7	12	12	6
	Not stated	32	20	48	40

This optimistic view of the investigator does not seem to me to be invalidated by the fact that a considerable number of high school children think that veal is obtained from sheep, or by the fact that less than half the city boys questioned, were able to answer correctly the question, "How often do we have a full moon?" Neither should one make too much of the absurd answers that every extensive written examination affords. Perhaps, however, the following are worth putting on record. "Frances Willard was a nurse in the Spanish war; a writer of church songs; a great actor; a singer." "Jesus was an Arabian; a Turk; he was born 4,000 years ago." "Echo is the voice of a fairy that has no body." "Coal is mineral growth rotted for 100 years." "Coke is petrified sponges." "Leather is made from bark." "Glass is made from sand and nitro-glycerine." "Venison is from bear; turkey; possum." "Vinegar is made from cucumbers; from fermented whiskey." "It takes two hours to go from Chicago to New York by train."

The fact that the cities from which the pupils wrote were small cities, and the fact that the number of country children questioned was very limited, will excuse us from emphasizing more than Table II does, the differences between the contents of the minds of urban and rural children. A more important comparison is that between the sexes. The girls show superiority in knowledge of the game of tennis, of Frances Willard, of Louisa May Alcott, of the changes of the moon, of the source of linen, the use of baking powder and bluing, and a few other matters. In the main, however, as far as this list of questions is concerned, the boys are markedly superior. They seem to surpass the girls even in telling where certain flowers are to be found. The girls are naturally deficient in knowledge of machinery. Only a small percentage of city girls know the number of wheels on a railroad car. The girls are also very cautious, failing in a great many cases to commit themselves by a conjecture when their knowledge is not sure. Personally I am inclined to think that a list of questions might be framed that would show in the girls a wealth of working or everyday knowledge that this investigation failed to reveal.

IV. Contents of the Minds of White and Colored School-children. (a.)[1]

The following investigation was made with the object of comparing the contents of the minds of colored children with those of white children of the same age and sex.

[1] By Mr. T. A. O'Farrell.

A questionnaire covering a wide range of subjects was submitted to pupils in the fourth, fifth, sixth, seventh, and eighth grades of the public schools in an Illinois city. In these schools the pupils numbered from 4 per cent. to 40 per cent. colored. Of the whites the majority came from American families of the middle class; but in some schools there were quite a number of Germans and Scandinavians.

Each child was handed a paper containing the questions, with spaces for the answers, and was allowed to fill it out without assistance.

Because there is a prevailing opinion among teachers that colored children are precocious in the early grades and that they are not able to keep pace in school with white pupils after the approach of adolescence, I divided them into preadolescent and adolescent groups. In the former were included the papers from the pupils aged 8-11 years inclusive, in the latter those from pupils aged 13-17 years inclusive. The papers from those aged 12 were discarded. In order to make a closer comparison I also made divisions according to sex.

Below in Table I, is a list of the questions and opposite each question is given the per cent. of persons in every group who answered the question correctly. It is evident from the nature of some of the questions that absolute accuracy could not always be expected. But by fixing certain limits, at least an approximation to accuracy was attained.

Table number II gives in percentages the average number of correct answers for the pupils of each group.

Among the white pupils no question was answered correctly by all the members of a group.

One question was answered correctly by all of the pre-adolescent colored girls, and four questions by all of the pre-adolescent colored boys.

In all cases the boys gave a larger per cent. of correct answers than the girls of corresponding groups.

Table II shows that for every age-sex group the white pupils gave a larger per cent. of correct answers than the colored pupils. This excess is 2.1% for the pre-adolescent boys and 8% for the adolescent boys; 7.4% for pre-adolescent girls and 2.6% for adolescent girls. But the entire excess for both pre-adolescent groups is almost the same as the entire excess for both adolescent groups. The results of this investigation seem to indicate that after the approach of adolescence, colored boys compare less favorably with white boys in mental ability, while colored girls compare more favorably with white girls.

The replies showed that one-third or more of these pupils did not know from what animals we get beefsteak, ham, bacon, and mutton, nor from what illuminating gas and printing paper

TABLE I

List of Questions	50 White Girls 8-11 yrs.	19 Col'd Girls 8-11 yrs.	44 White Boys 8-11 yrs.	18 Col'd Boys 8-11 yrs.	50 White Girls 13-17 yrs.	43 Col'd Girls 13-17 yrs.	50 White Boys 13-17 yrs.	45 Col'd Boys 13-17 yrs.
	% of Correct Replies							
Who is the mayor of——?	92.	89.4	95.4	88.8	98.	93.	98.	93.3
Who is Governor of——?	58.	57.8	63.6	61.1	88.	60.5	96.	66.6
Is President Taft a Democrat or a Republican?	92.	78.9	88.6	100.	96.	86.5	96.	97.7
Why do we celebrate the Fourth of July?	48.	21.	54.5	38.8	80.	56.	84.	68.8
——Christmas?	84.	89.4	81.8	83.3	92.	86.5	90.	80.
——Easter?	76.	89.4	54.5	66.6	74.	88.4	68.	68.8
——Labor Day?	2.	15.7	65.9	16.6	20.	23.2	34.	20.
——May 30th?	28.	36.8	40.8	33.3	66.	39.5	64.	46.6
Have you ever caught fish with a hook?	26.	52.6	75.	72.2	44.	53.5	80.	86.6
When in the woods, how can you tell which trees are oak?	50.	31.5	56.8	38.8	44.	60.5	58.	48.8
Have you ever seen corn growing?	78.	89.4	90.9	100.0	72.	86.5	98.	97.7
——wheat?	46.	47.3	75.	44.4	54.	53.5	70.	62.2
——oats?	40.	42.1	84.1	66.6	52.	65.5	80.	64.4
What is wind?	66.	68.4	65.9	61.1	40.	58.1	56.	53.5
What is the distance around the world?	34.	10.5	50.	33.3	32.	28.	44.	33.3
Which is the largest city in the world?	56.	47.3	59.1	50.	74.	56.	78.	82.2
How many miles is your home from Marshall Field's store?	34.	10.5	59.1	44.4	44.	28.	66.	68.8
Name some country from which we get tea?	84.	89.4	93.1	100.	88.	81.4	78.	80.

TABLE I—*Cont.*

List of Questions	50 White Girls 8-11 yrs.	19 Col'd Girls 8-11 yrs.	44 White Boys 8-11 yrs.	18 Col'd Boys 8-11 yrs.	50 White Girls 13-17 yrs.	43 Col'd Girls 13-17 yrs.	50 White Boys 13-17 yrs.	45 Col'd Boys 13-14 yrs.
	% of Correct Replies							
——coffee?	58.	36.8	63.6	33.3	68.	60.5	60.	46.6
——ivory?	26.	15.7	45.4	22.2	48.	37.2	60.	51.1
——rubber?	56.	31.5	52.2	27.7	28.	34.8	50.	42.2
From what animal do we get ham?	60.	47.3	70.4	77.7	82.	83.7	82.	80.
From what animal do we get venison?	32.	15.7	45.4	27.7	58.	44.2	44.	48.8
——beefsteak?	28.	57.8	81.8	72.2	68.	88.4	86.	91.1
——veal?	8.	10.5	20.4	22.2	30.	25.5	22.	22.2
——bacon?	62.	68.4	61.3	66.6	86.	72.1	74.	77.7
——mutton?	46.	26.3	59.1	72.2	70.	76.7	56.	82.2
From what do we make bread?	98.	100.	90.9	100.	98.	95.3	96.	93.3
——butter?	84.	89.4	88.6	77.7	86.	76.7	88.	86.6
——pepper?	16.	21.	38.6	11.1	42.	44.2	42.	46.6
——brick?	44.	15.7	31.8	55.5	66.	46.5	70.	73.3
——silk?	56.	21.	52.2	27.7	78.	69.7	74.	64.4
——vinegar?	32.	26.3	36.4	38.8	48.	67.4	56.	68.8
——brass?	6.	0.	0.	0.	2.	4.6	0.	4.4
——glass?	8.	5.2	25.	5.5	28.	25.5	42.	42.2
——leather?	62.	36.8	70.4	50.	76.	60.5	84.	22.2
——illuminating gas?	22.	26.3	22.7	11.1	34.	28.	44.	24.4
——paper?	40.	63.1	52.2	33.3	44.	58.1	72.	51.1
What is the cost of a good pair of shoes?	88.	68.4	97.7	77.7	92.	83.7	94.	86.6
——piano?	60.	63.1	72.7	77.7	86.	36.5	90.	77.7
——dishpan?	84.	63.1	75.	77.7	82.	76.7	76.	73.3

TABLE I—*Cont.*

List of Questions	50 White Girls 8-11 yrs.	19 Col'd Girls 8-11 yrs.	44 White Boys 8-11 yrs.	18 Col'd Boys 8-11 yrs.	50 White Girls 13-17 yrs.	43 Col'd Girls 13-17 yrs.	50 White Boys 13-17 yrs.	45 Col'd Boys 13-14 yrs.
	% of Correct Replies							
——pair of roller skates?	90.	63.1	95.4	88.8	92.	88.4	94.	82.2
——dining chair?	80.	68.4	68.1	88.8	76.	83.7	90.	55.5
——a pound of nails?	64.	31.5	68.1	61.1	56.	62.7	68.	64.4
What is the cost of a pound of butter?	94.	73.6	90.9	94.4	98.	90.7	98.	88.8
Does the earth move or stand still?	98.	73.6	93.1	83.3	96.	86.5	92.	93.3
Which is the larger, the earth or the sun?	58.	36.8	59.1	66.6	78.	72.1	72.	73.3
Which is the larger, the earth or the moon?	60.	52.6	45.4	55.5	42.	44.2	42.	40.
Have you ever seen a shooting star?	42.	42.1	59.1	66.6	68.	67.4	58.	86.6
Have you ever seen an eclipse of the sun or of the moon?	44.	42.1	61.3	50.	58.	65.1	76.	71.1
Can you tell which is the north star?	58.	36.8	77.2	50.	72.	56.	70.	64.4
What do we mean when we say the sun rises and sets?	4.	5.2	11.3	16.6	16.	13.9	32.	13.3
What do we mean when we say the moon rises and sets?	38.	21.	27.2	11.1	24.	23.2	20.	44.4
What causes thunder?	24.	15.7	25.	5.5	6.	9.3	10.	2.2
What causes water to flow from a hydrant or a faucet?	20.	52.	36.4	33.3	28.	23.2	50.	35.5
What are the eaves of a house?	20.	15.7	18.1	5.5	46.	30.2	52.	24.4
What is the gable of a house?	10.	0.	9.1	11.1	26.	25.5	38.	15.5

TABLE II

Group	Average % of correct answers.	Group	Average % of correct answers.	Excess % of whites over colored pupils.
Colored boys 8-11 years	51.7%	White Boys	53.8%	2.1%
Colored girls 8-11 years	43.7%	White Girls	51.1%	7.4%
Colored boys 13-17 years	61.1%	White Boys	69.1%	8. %
Colored girls 13-17 years	57.5%	White Girls	60.1%	2.6%

are made. Practically none knew from what pepper, vinegar, glass, and brass are made, the meaning of gable and eaves, of the rising and setting of the moon, or from what animal veal is obtained. Almost none of the Fifth Grade pupils understood sunrise and sunset, and only one-third of the Eighth Grade pupils could explain these phenomena. Not one could give the cause of thunder. Less than one-half knew the distance to Marshall Field's store, or the distance around the world, the source from which ivory and rubber are obtained, or the cost of nails. Fewer than one-fourth could state what causes the flow of water from the hydrant.

An idea that is foreign to one-third of a class is of little service in teaching, and when one-half or more of a class are unfamiliar with a given idea, it is of practically no value in class work. Any instruction which is based on the assumption that such an idea is present in the minds of the pupils must be futile. The inquiry seems to show that these children were quite ignorant of the sources of the most familiar things and of the causes of the most common phenomena, and had very inaccurate ideas of distances.

The estimates as to the circumference of the earth varied from three hundred and sixty miles to thirty-two million miles; of the distance to Marshall Field's store (four and one-half miles) varied from one to twenty-five miles. May 30th is celebrated because it is Arbor Day, the day the President takes his seat in Congress, the day for agricultural meetings. Veal was said to come from lambs, cows, pigs, sheep; venison from fowls and chickens; mutton from the calf. Vinegar is made from pickles, from water and acid, from beets, from rotten apples. The common idea of thunder was that it resulted from the collision of clouds or fogs, a few thought that it was caused by lightning

striking the ground. Moonrise was said to be due to the setting of the sun; when the sun rose its brightness was said to hide the moon. The price of a dining room chair varied from $.75 to $44.00; of a piano from $7.00 to $14,000.00, of a pound of nails from $.05 to $.75. One child thought that Labor Day was the day the slaves were set free, another (a negro girl) that this happy event occurred on July 4th.

(b)[2]

One of the Eighth Grade classes "A", to which were submitted the questions in Table I, was in a school in an American, or a German-American neighborhood, the residents of which were as a rule in moderate circumstances. Another Eighth Grade class "B" was from a school in a congested district containing many poor families, about one-third of the population being negroes. The average age in class "A" was 14.1 years, of "B" 14.6 years.

In class "A" the percentage of correct answers to twenty-six of the questions was appreciably higher than for the same questions in class "B." In the answers to four of the questions, class "B" made the better showing. For the remaining twenty-five questions, the answers were about equally good. The two classes had about the same degree of understanding of the meanings of the holidays, only two-thirds of the whole number knowing the meaning of Easter, only one-fourth Labor Day, about one-fourth of class "A" and one-half of class "B" why May 30th is celebrated. More pupils in class "A" than in class "B" knew what wind is. Less than fifty per cent. in either class knew from what ham, bacon, and venison are obtained, from what butter, pepper, brick, silk, glass, leather, gas, and paper are made, and the meaning of sunrise and moonrise. The percentage of correct answers to the last two questions were sunrise, class "A," 33%; class "B," 16%; moonrise, class "A," 12%; class "B," 3%. Class "A" had the better knowledge of distances, and 24% of their number stated what causes water to flow from the hydrant, as against 3% of the other class.

Two Fifth Grade classes were in the same school as the Eighth Grade class "A." One class (C) had been for eight months in charge of a teacher of moderate ability of the drill-master type, one not likely to encourage initiative or a questioning attitude of mind. The other class (D) had been for the same length of time under a good teacher, who encouraged alertness and responsiveness in her pupils. The average age of pupils in class C was 11.5 years, of class D 11.1 years.

[2] By Mr. C. D. Lowry.

The percentage of correct answers to twenty-one of the questions was appreciably higher in class D than in class C. The reverse was true of the answers to six of the questions. To the remaining questions the answers of the two classes were about equally good. The pupils of class D had better ideas of the holidays and had more experiences with growing things, showed a better appreciation of distances, knew more of the origin of common things, and had a better knowledge of prices.

Comparisons of the answers of the pupils of the Fifth Grade with the answers of the Eighth Grade pupils of the same school showed that the Eighth Grade class answered thirty-one of the questions appreciably better than did the Fifth Grade pupils. In the answers to three of the questions, the Fifth Grade made the better showing. To twenty 'the remaining questions' the answers in the two classes were about equally good. The Eighth Grade pupils knew more about holidays, the sources of common things, and their composition, and were better acquainted with prices and with the causes of natural phenomena.

It is noteworthy that the advantage that this Eighth Grade class showed over the Fifth Grade is about the same that it showed in comparison with the Eighth Grade in the school in the less favored community. Twenty-one of the questions in which it made the better showing were the same in both comparisons.

Mr. Lowry's study seems to indicate a considerable retardation in the children of less favorable social conditions. However, all general conclusions are felt to be premature in a comparatively new field in which we are still gathering data.

BOOK NOTES

The Distribution and Function of Mental Imagery, by GEORGE HERBERT BETTS. New York. Published by Teachers College, Columbia University, 1909. 99 p.

The author announces that his monograph is concerned with four general questions: 1. With what degree of facility and of vividness may the various sorts of imagery be evoked at will? 2. How are the various sorts of imagery correlated with one another? 3. What is the correlation between ability in voluntary imagery and scholarly ability in general? 4. What is the function of spontaneous imagery in our ordinary processes of discriminating, remembering, associating, thinking, interpreting music, enjoying literature, and the like?

Verbal imagery is left wholly out of account, save in a few passing references; and in the collecting of his data, the author relies upon the questionnaire method and the class experiment. His observers were undergraduate students who had had less than a year's experience in psychology, teachers who attended 'Extension' lectures on educational psychology, and a group of 'trained psychologists.' His procedure consisted in presenting to a class a series of questions regarding the presence and the vividness of their voluntary, non-verbal imagery, and in asking them what concrete imagery they employed in accomplishing certain assigned tasks. These tasks consisted in discriminating between certain pitches, brightnesses and spatial extents, in memorizing and recalling groups of letters, in defining concepts, in multiplying numbers, in adducing arguments in defence of a thesis, and the like. The results obtained by these means are summarized and tabulated and a variety of correlations are calculated in a most thorough-going and systematic fashion.

The author finds that capacity for voluntary recall is much more uniformly distributed among the various sorts of imagery than other investigators have reported. A comparison of the proportion of voluntary imagery of the different sorts, which are classified under his superlative degrees of clearness and vividness, shows that the seven sense-modalities vary only between the limits of 50 per cent. and 68 per cent. And this unexpected distribution is supported by the results of a detailed correlation of the various sorts of imagery with one another. It seems to follow from this finding that individual variation in voluntary imagery is of negligible significance, and that the concept of ideational types is a misnomer. Nor do visual images possess the superior vividness which is so often ascribed to them. Indeed, from one of Betts's tables showing the sensory distribution of imagery which reaches the highest degree of vividness, it appears that visual images of maximal clearness are relatively least frequent, while auditory and organic images of maximal clearness are relatively most frequent; a second table, while not wholly in agreement with the first, still shows that visual imagery excels olfactory imagery alone in relative frequency of high degree of vividness. It is found, too, that the correlation between voluntary, concrete imagery and mental efficiency is negative (p. 31), or at best only slightly positive (p. 19).

The author concludes that psychologists have exaggerated the importance of imagery. Most persons possess a wider range and a greater profusion of imagery than they ordinarily make use of in their mental operations. This surplus imagery seems to exist as a vestigial product; it may drop out without in any way interfering with mental efficiency,—indeed its absence frequently leads to a greater efficiency. Memory may function without its intervention; and much of the imagery which accompanies memory is of no advantage in the act of remembering. The appreciation and enjoyment of literature is much less dependent upon imagery than is commonly supposed. There are two occasions upon which imagery tends chiefly to come to consciousness: when our thinking is baffled, and when the situation is such that percepts may be of assistance. But the most efficient and successful thinking, at least in so far as it is logical and abstract, is in most instances accompanied by the least imagery.

This monograph is open to two obvious criticisms: 1. As to method. Most psychologists will raise the objection that an untrained introspector cannot be depended upon to furnish a reliable description of the intimate nature of his complex mental processes; it may be objected, too, that the class experiment and the utter absence of experimental control introduce conditions which may vitiate the introspections of even the trained observer. 2. As to the interpretation of results. The author confined his investigation to concrete imagery; but in his discussion he makes the most sweeping generalizations concerning the function of imagery in general. It is at least conceivable that verbal imagery may play a part in the types of mental functioning which he has chosen for investigation. In the opinion of the reviewer, few, if any, of the author's conclusions regarding the function of imagery are warranted by his data.

Many years ago, Fechner and Galton suggested that concrete images ordinarly play a relatively minor rôle in the higher mental processes of the educated adult. This view has been supported by the investigations of Meumann and of numerous others, and is now the common property of modern psychologists. Whether, in view of Betts's experimental procedure, his monograph is to be regarded as a genuine confirmation of even this modest position is open to serious question. It certainly cannot be regarded as a convincing argument for the doctrine of 'imageless thinking,' which its author advocates.

Clark University. J. W. BAIRD.

China and the Far East. Clark University Lectures, edited by George H. Blakeslee. Thomas Y. Crowell & Co., New York, 1910. 453 p.

This work contains twenty-two lectures by as many different authorities upon the subject, which were given in the historical section of the celebration of the twentieth anniversary of the foundation of Clark University, where each section arranged for a gathering of specialists. The aim was twofold: first, to emphasize the importance of presenting in school and college work the leading features of the development of the Eastern World in general; and second, to stress the importance of modifying historical instruction in colleges and universities, so that it shall include contemporary events, as well as the stock antiquities which make up the usual curricula in this subject. This conference held nineteen sessions and listened to forty-five authorities on the political, social, economic, military, educational and religious aspects of the Eastern situation. As all would have made too bulky a volume, it was decided to exclude the shorter

addresses and the material bearing upon the Philippines and India, and to print here only certain of the more formal papers on China, Japan and Korea. A number of the omitted papers will be published in the early numbers of a new journal shortly to be issued at Clark University, which will deal with the problems connected with the attempts to extend Western civilization to peoples less highly developed.

The American Rural School, by HAROLD WALDSTEIN FOGHT. The Macmillan Co., New York, 1910. 361 p.

This work undertakes to set forth "the profound movement to make our American rural life richer and its labors more effective by means of schools adapted to the changing needs of rural society and the demands of modern life." It does not seek out a new basis for school conduct, nor run counter to the established laws of life and growth, but is constructive and attempts to leave behind the artificial interests that have hampered the usefulness of this institution in the past and place it in the midst of natural interest "where it can prepare the youth for sane, wholesome lives on the farm, the normal American life of to-day." The work is evidently prompted by the Roosevelt Conference of experts to conserve our natural resources and to make rural life of more importance. The chapters are: the problem, organization and administration, rural school maintenance, supervision, the teacher and his training, salaries and tenure, buildings and sanitation, indoor furnishing and art, nature study in school grounds, school gardens, elementary agricultural and industrial clubs, manual training in one-room schools, literary and rural communities, hygiene and physical education, consolidation in schools. The book is enriched by a score or two of diagrams of garden plans, types of schoolhouses, grounds, etc.

Among School Gardens, by M. LOUISE GREENE. Charities Publication Committee, New York, 1910. 388 p. (Russell Sage Foundation.)

This a most timely and admirable book which should be in the hands of every teacher who cares anything for this subject. It seeks to tell us what the school gardens are, what are their purposes, where the best are to be found, to give directions so that a novice may start them, to show how even the smallest can be of great benefit to children, and to share with those who are interested the knowledge of the work done in different places. Until lately it was difficult to obtain the right kind of instruction here without leaving home. The following are the chapter heads: the evolution of the school garden; its different kinds; soil fertility; cost of equipment; planting and planting; after planting, what; an interlude, some garden weeds; the school garden in vacation and in term time; some last things. The appendices are devoted to testimonies, how to plant a tree, how to prune, with a hymn for arbor day. The book has perhaps 130 illustrations, and is by far the best we know of in any language upon this subject.

French Secondary Schools, by FREDERICK ERNEST FARRINGTON. Longmans, Green & Co., New York, 1910. 450 p.

For 75 years Germany has been frequented by American scholars and teachers, and especially since the War of '70 has been the cynosure of all eyes. It is believed that French schools and the school system are worthy of far more attention than they receive. The author has devoted a year of residence to this work. He first traces the history of French education, then describes organization, admin-

istration of the secondary schools, relations to life, the teaching of classics, modern languages, history, geography, science, gymnastics, drawing, philosophy, public education for girls, grammar schools and in a dozen appendices gives various illustrative documents, copies of diplomas, curricula, chronological tables, programmes of study and examination work, etc. The book is a very valuable, if somewhat voluminous volume. We cannot but regret, however, that the author has paid no attention to the movement toward industrial and commercial education, which is a prominent feature of French secondary schools, but has, for the most part, adhered to the traditional themes.

St. George of Cappadocia in Legend and History, by CORNELIA STEKETEE HULST. David Nutt, London, 1909. 156 p.

The author seeks not to discuss the truth or falsity of the legends about St. George, but to collect the theories, legends, allegories and romances that have grown up around him, which are significant of his influence upon men and nations and the changes of spirit toward him in the course of the centuries. In the Greek church, he was the great martyr and was revered even by Mohammedans. In church legends, he is a saint and Christian hero who slays a dragon and rescues a princess. He was a hero of ballads and plays with and without a religious cast, and, later, he lapsed to a mock heroic butt of Christian mummers. Hence, the author treats first the allegories, then the spread of the veneration for the saint, the orders and institutions due to his influence, the romantic development and how the hero appears in later centuries. The book is interspersed with photographs of great works of art concerning him, and there is an excellent bibliography at the end.

The Autobiography. A critical and comparative study by ANNA ROBESON BURR. Houghton, Mifflin Company, Boston, 1909. 451 p.

This study is based on 260 capital autobiographies and is classified according to the reasons for writing as follows: self-study and science, request of friends, no one else likely to do it or to do it so well, money, pride of birth, study of insanity, to emblazon the power of opium, to revive his Latin, for the use of children or descendants, religious writings, purely apologetic, for amusement or to recall the past, no reason given. The more important chapters are as to autobiographical intention, history, sincerity, the diary and letter, three given architypes, influence and imitation, relations to fiction, nationality and profession, memory, religion, the nervous system of the past, the relation of the sexes, humor, self-esteem, work and aims, genius and character.

General Biology, by JAMES G. NEEDHAM. The Comstock Publishing Co., Ithaca, N. Y., 1910. 542 p.

This book offers a series of practical studies of biological phenomena for the guidance of the general student. It is not a formal text and not at all a treatise; but only a guide designed to assist the student in acquiring for himself some real knowledge of living nature. It differs from other college texts in providing a wider range of themes. The proportion of morphology is reduced and this squares with a tendency that is now very widespread and wholesome. The very conditions of life make an ever-increasing need for, and knowledge of it, and some principles of biology are now necessary for general intelligence. The work is interesting, and not a few of the 280 odd illustrations are also new. Even a few photographs of individual leaders are introduced.

Government by Influence and Other Addresses, by ELMER ELLSWORTH BROWN. Longmans, Green & Co., New York, 1910. 237 p.

These addresses treat of the self-respect of cities, the development of agricultural education, relations of religious and secular education, the culture of righteousness, the schools in the movement for international arbitration, co-operation between the educational associations of different countries, are we inventive in the field of education? needs of the children in the United States, training for motor work, work of women's organizations, distinctive functions of university and normal schools in the preparation of teachers, industrial education as a national interest, the art of the teacher.

Number by Development. A Method of Practical Instruction. *Primary*, by JOHN C. GRAY. J. B. Lippincott & Co., Philadelphia, 1910. 244 p.

Part first treats of the principles applicable to number teaching, origin of the measuring instinct, first measuring ideas, kinds of measuring units, quantitative and qualitative units for developmental work, number as group units, objective work in group unit development, forms of objects for group unit development. The second part outlines the steps in the development process: language, introduction of x, counting by groups, memory tests, "take away," "times," "has how many," counting with tens, reverse counting, "will make" work from ten to eighteen, memory and advanced work, number facts in addition and subtraction from eighteen to one hundred, shall constructive work cease with eighteen? facts of the numbers above eighteen in x and —, partition, improper fractional partition, approximate times and schedules.

Addresses to Teachers, by DOROTHEA BEALE. Longmans, Green & Co., London and New York, 1909. 79 p.

These are heart to heart talks addressed to those of her pupils who intended to teach, and published after her death. The topics are of the most practical character: the disposal of our time; the care of self; health after a retreat; special faults of teachers; indolence in thought; government and guidance of character; individualizing; natural science for teachers; Scripture teaching and lessons on teaching the Old Testament.

Masters of Achievement, edited by Henry W. Ruoff. The Frontier Press Co., Buffalo, N. Y., 1910. 1038 p.

This is a subscription book, one of many of its kind. It is, however, unique in devoting the first 516 pages to a more or less extended biography of one hundred great names, grouped under the heads of literature, fine arts, religion, philosophy, science and discovery, and politics, with two or three score illustrations. The second part contains "four thousand other masters," including contemporaries, with perhaps as many more illustrations.

Child Employing Industries. Proceedings of the Sixth Annual Meeting of the National Child Labor Committee. American Academy of Political and Social Science, Philadelphia, 1910. 274 p. (Supplement to the Annals of the American Academy of Political and Social Science, March, 1910.)

We have here nearly threescore addresses of experts on various aspects of the topic, which make it one of the most interesting and important, as it should be since it is the latest of the discussions of this great topic.

Zeitschrift für Säuglingsschutz. Redigert von PROFESSOR DR. ARTHUR KELLER. Verlag von GEORG STILKE, Berlin.

This new journal issued the first number of its first volume last July with an interesting array of specialists as editors. While it is a special organ of the Emperor Auguste Victoria-House, which was founded to reduce infant mortality in Germany, it really takes a national, if not international, point of view. The editors seek to be at the same time scientific and popular. They discuss literature and articles upon the broad field and have only occasionally yielded to the tempation to treat topics too learnedly for the practical work of child saving and welfare. The spirit, vigor and intelligence of this new journal reminds us of Mr. Devine's survey, although its purpose is far more special, being restricted to infant welfare.

Dramatic Reader for Grammar Grades, by MARIETTA KNIGHT. American Book Co., New York, 1910. 267 p.

The author has had an experience of ten years in helping boys and girls present scenes from small plays and is satisfied that the dramatic instinct is very strong in children, and that the ordinary school material and work do not satisfy or develop that interest. Children often leave school with artificial and monotonous intonations and emphasis, but this all vanishes when children lose themselves in pretending to be some one else. They then show spontaneity and natural tones. The book consists of over a score of playlets on various themes and from various sources arranged as we understand it, by the author.

Life and Health, by JAMES FREDERICK ROGERS. J. B. Lippincott Co., Philadelphia, 1910. 202 p.

The author deplores that although there never was so much interest in the subject of bodily welfare as now, there never was so much diversity of theory, so many barkers at side-shows, so that the health seeker often travels from one disappointment to another. The first part of the book is a general picture of the body in life and health, while the second deals more explicitly with the problems of hygiene. The work is a valuable and interesting contribution to the subject.

La Vraie Éducation, par PAUL GAULTIER. Librairie Hachette et Cie, Paris, 1910. 281 p.

This work, dedicated to Compayré, is divided into four parts, treating respectively of the education of the body, sensibilities, intelligence and the will. The propositions of the author will not strike Americans as at all radical, but his design is evidently to focus on those points which he regards as of chief importance.

Studies in Melody, by W. VANDYKE BINGHAM. The Psychological Review, Jan., 1910, Vol. XII, No. 3. 88 p.

This is an interesting and valuable study divided into four parts: (1) the melody problem, (2) the phenomena of melodic "relationship," and of melodic trend, (3) effect of melodic stimuli upon muscular movement, (4) suggestions toward a motor theory of melody.

Salary Loan Business in New York City, by CLARENCE W. WASSAM. Submitted in partial fulfillment of the requirements for the degree of doctor of philosophy in the faculty of political science, Columbia University. New York, 1908. 127 p.

Milch und Molkereiprodukte, ihre Eigenschaften, Zusammensetzung und Gewinnung, von PAUL SOMMERFELD. Quelle & Mayer, Leipzig, 1910. 140 p.

Women and the Trades. Pittsburgh, 1907-08, by ELIZABETH BEARDSLEY BUTLER. (Russell Sage Foundation. The Pittsburgh Survey, findings in six volumes, edited by Paul Underwood Kellogg.) New York Charities Publication Committee, 1909. 440 p.

The Elements of English Versification, by JAMES W. BRIGHT and RAYMOND D. MILLER. Ginn & Co., Boston, 1910. 166 p.

John Bunyan's *Grace Abounding*, edited with introduction by Edward C. Baldwin. Ginn & Co., Boston, 1910. 148 p.

Goldsmith's *The Deserted Village.* Gray's *Elegy in a Country Churchyard*, edited with introduction and notes by Louise Pound. Ginn & Co., Boston, n. d. 64 p. (Standard English Classics.)

John the Unafraid, by ANON. A. C. McClurg & Co., Chicago, 1910. 128 p.

The Riddle of Life and Health, by THOMAS BASSETT KEYES. The Tubercle Press Bureau, Chicago, 1910. 81 p.

The Æneid of Virgil, translated into English prose by John Conington. Edited with introduction and notes by Edgar S. Shumway. The Macmillan Company, New York, 1910. 348 p.

The Republic of Cuba in 1909, September. Rambla y Bouza, Habana, 1909. 46 p.

Ein Beitrag zur grammatischen Entwicklung der Kindersprache, von I. A. GHEORGOV. Wilhelm Engelmann, Leipzig, 1909. 432 p.

Reéducation Physique et Psychique, par H. LAVRAND. Bloud & Cie., Paris, 1909. 121 p. (Bibliothèque de psychologie expérimentale et de métapsychie.)

A Primer of Essentials in Grammar and Rhetoric, by MARIETTA KNIGHT. American Book Co., New York, 1905. 64 p.

Stories from European History, by LUCY DALE. With 4 plates in color and 39 other illustrations. Longmans, Green & Co., New York, 1910. 144 p.

Landmarks of British History, by LUCY DALE. With 8 plates in color and 72 other illustrations. Longmans, Green & Co., New York, 1910. 256 p.

Ballon- und Flugmotoren, von A. HAENIG. C. J. E. Volckmann, Rostock, i. M., 1910. 196 p.

Die internationalen Luftschiffe 1910. Ihre Bauart und Eigenschaften nach dem Stande von February, 1910. Nach authentischen Quellenbearbeitet von Neumann, Oberleutnant und Direktor der Luftschiffer-Schule des Deutschen Luftflottenvereins in Friedrichshafen. Mit 52 Abbildungen. 102 p. Gerhard Stalling, Oldenburg, i. Gr. 1910.

A Certain Rich Man, by WILLIAM ALLEN WHITE. New York, The Macmillan Company, 1909. 434 p.

Tlingit Myths and Texts. Recorded by John R. Swanton. Smithsonian Institution, Bureau of American Ethnology, Bulletin 39. Washington, Government Printing Office, 1909. 451 p.

The Martyrdom of Man, by WINWOOD READE. 14th ed. The Truth Seeker Co., New York, n. d. 543 p.

This new edition shows the popularity of this interesting book, which evidently is still maintained. Its four chapters on war, religion, liberty, and intellect, have long been familiar to many readers.

Easy German Stories, by C. E. RIES. Edited by Ernest H. Biermann. New York, American Book Company, 1910. 183 p.

La Petite Princesse, par JEANNE MAIRET. Edited for school use by Edith Healy. New York, American Book Company, 1910. 154 p.

New-world Speller, by JULIA H. WOHLFARTH and LILLIAN E. ROGERS. World Book Company, Yonkers, N. Y., 1909. 160 p.

Der Fluch der Schönheit, von WILHELM HEINRICH RIEHL. Edited with introduction, notes, exercises, and vocabulary by Arthur N. Leonard. Ginn & Co., Boston, n. d. 137 p.

Schiller's Maria Stuart. Edited, with introduction, repetitional exercises, notes, and vocabulary, by John Scholte Nollen. Ginn & Co., Boston, n. d. 361 p.